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PART I.

ORIGINAL COMMUNICATIONS.

An Address, delivered before the St. Andrew's Agricultural and Police Society of James' Island, on the 7th of April, 1835; by Dr. THOMAS LEGARE, jun.

[Communicated for publication in the Southern Agriculturist, at their request.]

Gentlemen,—It seems to have become the fashion of the age, for the uneducated to taunt at Science and Philosophy as something they imagine to be visionary and absurd,—this may be, and indeed, is always true of false philosophy; but, that scientific deduction of principles, from a faithful observation of the phænomena of nature, which has given rise to every invention, instrumental in promoting the necessaries and luxuries of mankind, surely cannot be thus stigmatized, inasmuch as it has commanded the suffrage of mankind in every age and in every clime.

Does it not seem ungrateful in the farmer, who derives his every thought from the wise and bounteous book of nature, and whose every action springs from a servile imitation of her common laws, to be found denying his obligation to the source of all his blessings, and, like the ungrateful ox, living ignorant of the hand that feeds him; it is but just that such intellects should be kept ignorant of the grand and comprehensive secrets of Science, and

that to them, at least, it should ever be a sealed book. The art of printing has been properly considered the greatest discovery of mankind, from the very fact, that it affords new facilities in conveying to posterity the accumulated wisdom of antiquity, classified and arranged in a clear and comprehensive form, to become the beacon light, to each aspiring intellect in its own successive generation; and to enable the inventive mind, fraught with new discoveries for the benefit of mankind, to take its stand upon the elevated mound of experience; and having its horizon thus interminably enlarged, to reveal from the past, the deep hidden secrets of the future.

Every Science, gentlemen, has its origin in the small and confined circle of individual observation. This confirmed by cotemporaneous testimony, and arranged in a philosophic form, then embodied in history, descends to posterity as a legacy from their ancestors, saying to them in the forcible and eloquent language of accumulated ages, "go and do ye likewise."

We owe a debt of gratitude to our posterity corresponding to the weight of obligation derived from our ancestors; and in the whole range of Science, there is no department which so decidedly marks the first step of every society, emerging from barbarism to civilization, as that of tilling the earth. All the principles of the Arts and Sciences, even the idea of the right of property (which is the foundation of civil society) is derived from the fact of mankind appropriating certain portions of the earth to the purpose of cultivation. Even in the most improved state of society, where Science assumes its most proud and triumphant stand, all its materials are derived from the husbandman. The sailor and the soldier, the man of letters and the most successful inventor of mechanics, are but subsiduaries to the farmer. Our profession claims the honour of feeding and clothing the world; and who is he, that, admitted to a vocation so useful and distinguished, could either be ashamed of, or lukewarm in his calling—who does not feel ambitious to see Agriculture raise its head to a footing with its sister sciences, and enlarge its benefits to mankind?

It is true, that necessity is said to be the mother of invention—but why should we wait for the griping hand of need to force us to the promotion of our own comfort. The time has been, when from the abundance

of waste land, and the absence of competition, the avenues to wealth in this country were easy, and the system of agriculture unpardonably wasteful; but that time has now past, and it behoves us to be up and doing. The curse is now on us—"by the sweat of thy brow shalt thou live."

The dense population of England, with a scarcity of land, has long since taught that industrious and ingenious people, the invaluable secret of the influence of manures of various kinds, in regenerating exhausted soils; and every day's experience is adding new contributions to these practical and profitable discoveries. Our Northern brethren, led by the same necessity, are emulating the European agriculturist; and, I am proud to say, that some aspiring individuals of the South, have taken fire at the spirit of enterprize that is abroad; and it is to the Agricultural Societies established by their exertions, that we are to look for all future improvements, creditable to the South and profitable to the *planter*.

To two or three individuals, particularly of this Society,* will this Island, long owe a debt of gratitude for the agency they have had in its establishment, and for the changes which have been effected (by the cheering influence of their advice and example) from the lowest ebb of wasteful cultivation, to the proud claim of rivaling our Edisto brethren, undoubted leaders in the cultivation of sea-island cotton. And here, the subject which I propose to direct my attention to, necessarily suggests itself to our consideration.

There is no circumstance which has so decidedly a tendency to blast the hopes of the Southern planter, as a total disregard of what is properly termed *rural economy*. This is a comprehensive term, involving the entire discipline of the planting interest.

The first point I propose to treat of, is that old, but wasteful practice, of laying out the largest portion of our capital in extensive, but unproductive tracts of land.

* Mr. William Henry Peronneau, though not at present a resident of James Island, must feel himself identified with the prosperity, that has followed his zealous and successful exertions in the establishment of the St. Andrew's Agricultural Society. To Captain John Rivers, Mr. James Cuthbert, Mr. Winborn Lawton, and Capt. John Girardeau, is the credit due of being his ardent and enlightened co-adjutors in this great public work of agricultural usefulness; to them, must be assigned the honor of being its founders.

This custom, though sanctified by time, is fast giving way to the force of necessity; and overgrown *estates* (fading monuments of ancient aristocracy) have been divided into smaller and more fertile portions, diffusing their blessings to the many, instead of pampering the pride of the few, and cursing the community with the influence of a barren and wasteful capital. We still retain, however, too much fondness for this ancient usage; particularly as it indulges our disposition for indolence. What the father possesses has to be divided into many fractions; and the wants of mankind, in the present state of things, require one acre of land to support as many individuals, as formerly required four. It is then a deeply interesting question, by *what means is this to be effected, and to what extent can it be carried.*

It was formerly the custom of all, and is still that of some, to accumulate as much land, as will afford these changes of fields; by which means, their lands are brought into profitable employment but once in three years. The fact they pretend to bring in favour of this practice is, that the soil (when too frequently cultivated) becomes loose in its texture, and for some other cause, which they do not attempt to explain, is apt to cast its fruit in the rainy months of summer. This, in my opinion, is but an apology for their indolence; for, if the fact be inquired into, it will be fonnd that in almost every case, the parties are in the habit of depending upon the natural powers of the soil; or have as yet made but very limited experiments upon land long since worn out by the old continued system of cow-pens, without restoring to the earth the several principles which every vegetable must tend to exhaust.

No man who has lent a philosophic attention to the influence of manure, can be ignorant of its tendency to cement together the different particles of earth, and thus to impart density to the soil, independent of the chemical principles, which it undoubtedly bestows as nutriment to the plants; and this view of the subject necessarily suggests the importance of discriminating between the different kinds of manure, as applicable to different soils.

Nature is always bountiful enough to bestow (in the very neighbourhood of the necessity) the remedy required; and it was discovered by an enterprizing and philosophic farmer of England, that a purely silicious soil (which

had long been abandoned as sterile and useless) could be brought into cultivation to great advantage, by mingling with its loose and unconnected particles, the marl to be found but a few feet beneath its sandy surface—thus availing himself of nature's guidance, in thus combining such due proportions of the different earths, as afford the happiest medium for the transmission of heat and moisture.

In addition to this influence of manure, it is allowed on all hands, that by a discriminating attention to the subject, we can always restore to the soil the exact principle, (whether of a mineral or vegetable nature) that the occasion may call for; as indeed, all crops do not call for the same kind of food. By this system of cultivation, we can continue to resuscitate an entirely exhausted soil, and go on yearly to increase in fertility, that which was originally good.

I have, no doubt, that directed by some such view of the subject as this, an ingenious friend of mine, (on John's Island) is now conducting an experiment (which was successful last year) with a view of ascertaining, whether, by continuing to plant on the old bed, introducing the manure and seed into holes opened in the space between the hills of the last year's planting, and thus alternating the space from year to year, he would finally succeed in making the soil, a mass of well decomposed manure, with a medium sufficiently dense for the cultivation of any plant.

It is surely a matter of reproach to our Agricultural Societies, that amidst their somewhat creditable exertions, they totally overlooked the propriety of establishing a communication with some professional chemist of their neighbourhood, with a view of analyzing the elementary principles of our various soils. It is to this circumstance, I am satisfied, that most of the diseases that have afflicted our crops of late, are to be attributed. It would seem from comparison with the crops of olden times, and that of the present day, that some principle of the soil essential to the growth of cotton, has been exhausted; and that the present blind and emperical mode of applying the same manure to all soils indiscriminately, falls far short of meeting the necessities of the case.

By analyzing the soil (in its virgin state) which is known to be most congenial to the cultivation of the plant, as well as those varieties, which produce the diseases of *rust*,

of *blue* and of *flag;* we will be able to apply our remedies with more accuracy and effect, and thus confer a positive benefit to the planting interest.

While on this subject, let me not forget to pay a passing tribute of gratitude to that successful experimentalist, to whom we are indebted for the invaluable discovery of *cotton-seed, as a manure*, peculiarly applicable to corn, (and by some it is supposed) for the discovery of *marsh-mud, as a mauure*, for the soils immediately in its neighbourhood. In the triumphant experiment of Mr. King, we see and feel the bounty of that Providence that "tempers the wind to the shorn lamb." The soil on the sea-board, originally very light, and of superficial surface, besides completely exhausted by long cultivation, being the earliest portion of the state discovered and settled, was fast becoming a burden to the owner, when the resuscitating influence of *marsh-mud* was brought to light, to revive the drooping hopes of the planter, by affording him the means of keeping his lands forever in heart.

With these facts staring us in the face, is it not surprising, that we should continue to travel the old beaten track, when nature has absolutely opened to us as new resources of wealth and support for our numerous children, as if she had blessed us with the discovery and possession of new countries; and when the establishment of this fact will enable us to bestow as decided support to one child, by the patrimony of one hundred acres of land, as now require three, and formerly twelve hundred? In truth, the melancholy and pathetic appeal, which has so often been made to the spirit of the churches, is strictly applicable to the desolation, which pervades our agricultural interest? "The harvest is plentiful, but the reapers are few."

One of the most prominent errors in our present system of cultivation, which requires correction, is that of overplanting ourselves to such a degree, as materially to interfere with the manuring system. This is a point of such deep importance, that in my humble opinion, nothing should be permitted to supercede it. Is it not almost barbarous to see one lagging so far behind the spirit and enterprize of the age; and spurred on by a misguided avarice, attempting to tear from the exhausted bowels of nature the last moiety of her treasure? Is he one tittle wiser than he of fabulous memory, who destroyed

the life of an animal, possessing the invaluable power of reproducing and bestowing upon its owner a daily tribute of gold, from the greedy and foolish desire of rifling the fountain from which such golden treasures flowed.

I am satisfied that it would be a decided *source of profit to the planter, to appropriate labourers exclusively to the purpose of collecting manure.* This will appear obvious when we reflect upon the necessity of, and the time required to effect the process of decomposition. A large portion of vegetable matter collected from the woods, is now worked up in our fields in a raw undecomposed state; while the contribution of animal manure is suffered to evaporate its strength, for the want of combination with some vegetable absorbent substance; and it is to this circumstance, we are to attribute the burnt and withered state of some crops in dry seasons, blasting the hopes of the planter after having (as he fondly flattered himself) made very creditable exertions. By this plan of appropriating certain labourers to the exclusive purpose of collecting and preparing manure for the use of the plantation; we can always have on hand a supply of one year in advance, well decomposed and suitable to the nourishment of any plant, in all the vicissitudes of seasons; at the same time afford the planter the means of being more accurate in the necessary proportions to be applied to the soil. In fine, if the labour, which is now distracted by most of the planters of this island to too great a diversity of purpose, were appropriated to the gathering of manure, for the great leading intent of cotton-planting, it would soon manifest itself in the increased prosperity of the community in general.

Another subject of complaint in our rude system of cultivation, is to be found *in the almost total neglect of our stock.* In all countries in which the system of agriculture has undergone any considerable improvement, the treatment of the brute creation, attached to the farm, has been much ameliorated; and the agriculturist has found his account in lending his attention particularly to the feeding and housing of these indispensable animals.

They amply restore to us an interest on the capital expended in their support, independent of the profits arising from the dairy; but among us they are left to range at large during the summer and winter, in search of what scanty provisions nature may afford, and over

such contracted pastures, as must inevitably prove more often a grave than a source of life. This unpardonable error, arises from too slavish an adherence to ancient customs. The introduction of cotton, as the staple plant of our State, with the increasing demand of the world for this article, acting on the avarice of mankind, has induced the planter of the present day, to take into cultivation almost every foot of ground, curtailing to the domestic animals, the only sources of life, which nature in her bounty had provided for them; without suggesting to the humanity of their owners, the necessity of substituting their extra attention to the care and comfort of these poor helpless creatures.

It is a sorry sight to see the winter-pen of some of our Southern planters, situated without regard to the comfort of these animals in the middle of a clearing, exposed to the unobstructed influence of every Northern blast, only for the purpose of approximating the spot where the manure will be ultimately required; and for this, they are daily driven to leafless pastures, to drag out their feeble lives until March, when thousands find relief from this hard and cruel treatment in the repose of death.

As land has now become scarce and valuable, and our pastures necessarily more contracted; while the demand for stock has actually increased, as a source of manure, it becomes an object of deep interest to the planter, to ascertain by what means he can support an increased number of these indispensable animals, upon a smaller space of ground than his forefathers, to whom, indeed, it was not an object of such vital importance.

Much can be done towards the promotion of this desirable object, by lending our attention more particularly to the division of our pastures. It is shocking to the rural economist, to see the sinful waste of provender, necessarily attendant upon the present system of pasturing.

In the fall of the year, when we have reaped in that portion of the crop destined for the barn, our cattle are turned into an extensive undivided enclosure, to banquet for a week or so, upon the wasted bounties of nature; and with an improvident spirit, natural to the brute, but disgraceful to the master, to trample down masses of food, that grazed upon with any regard to economy, would afford an abundant source of nourishment, during the few winter months that visit our genial clime—besides, it is

almost inconceivable to those, who have never lent their attention to the subject, how soon the grass-roots in our temperate climate (even in a few warm winter days) will revive and shoot forth their tender leaves, when relieved from the bruising pressure of animals constantly trampling upon, and loathing their food.

By dividing our fields off into a number of equal squares, we can always afford to our cattle, fresh feeding grounds, with a continued supply of young vegetation; while this very arrangement will enable the planter to keep from the encroachment of the stock, such portions of the crop as may not be ripe for the harvest; and avoid the loss of labour, which is now to be witnessed in the field of every planter, I may almost say every fall, in the appropriation of numerous servants, to confine the stock within certain bounds. As little attention is now paid to this subject, I will venture to prophecy, that it is but a few years, before it will be regarded as an indispensable item of rural economy.

Young and inexperienced, as an agriculturist, I will still take the liberty of recommending, that a journal be kept by every planter, recording the phænomena of the heavens, and the events of the plantation; for even the unlettered farmer prophecies as to the future from his observations of the past; and it often happens, that men totally unfit (from the nature of their education) for that habit of generalization, that enables the scholar to arrange under one simple principle, things and events apparently dissimilar; and thus to recall from the past, valuable lessons for the future; I repeat that such uneducated individuals, may possess and exercise the most vigorous and correct judgment, upon such subjects, as is often times brought back to their recollection, by the faithful and vivid description of a journal, written while image was fresh to their minds; for, indeed, what is common sense, but the faithful record of experimental philosophy.

The progress of the healthy or diseased condition of the plants, with our observation on the best mode of treatment found successful is, not only worth the labour of record to every philosophic mind, but seems to be indispensable to the future correct judgment of the individual, as well as a duty which he owes to his own immediate posterity, and the species in general.

The exact time to plant certain seeds, and the influence of the seasons upon the plants, are well worth the consideration of every inquiring mind; and this seems particularly to be suggested, by the still undetermined point, whether March or April corn succeeds in the long run. This may appear, a matter of indifference to those who are satisfied to follow the beaten track of their ancestors; but it is peculiarly discouraging to a young planter, like myself, to find grey hairs and doubts so closely allied. He is inclined to exclaim, "Oh when will the rays of truth beam upon me, or is my vocation to be ever in mystery."

Gentlemen, neglected agriculture, not only makes its appeal to your sense of interest, but it addresses itself to the nobler feelings of your nature, your generous ambition. Can you brook to lag so far behind in the spirit-stirring race of agricultural emulation, which so largely and successfully occupy the attention of our Edisto brethren, and a few honorable examples in other portions of our neighbourhood? Think you, that it was by this sleeping apathy, that the philosophic mind of Mr. Burden, was enabled to trace out the laws of vegetable production and reproduction; and by a brilliant conception, characteristic of genius, apply to our staple plant (but recently of coarse and wooly texture) the philosophic rule, that every living substance not only has the power of propagating its specific and generic character, but likewise its own individual peculiarities, and thus to become the founder of a new race of beings? In my humble opinion, the community of Carolina, as well as that of Europe, to whose luxury and taste he has so largely contributed, owe him a debt of gratitude, which I hope will not be left to posterity to pay. Let it not be said, that interest stimulated, and that interest will reward him. I know, from my personal acquaintance with him, that he was excited by higher and nobler motives, that he was impelled on, through difficulties and sacrifices of time and labour, which few of you, have any conception of. Yet, gentlemen, I have seen his aspiring pride, mortified by the taunting of those who were opposed to innovation; and when by the peculiar texture of his mind, (suited for untiring research) he finally accomplished his end, and hoped to enjoy the reward due to his long extended efforts—and which it was obvious, could only be

effected by the retention of his secret—I have heard him unblushingly censured for not bestowing upon the sluggard the results of his hard labour and dearly bought experience. There is no principle, so uniformly acted upon in civil society, and not only recognized, but rigidly protected by the laws, than that every man is supposed to possess a right of property in the lucubrations of his own mind. It was the only legacy which the poor lamented "Bard of Scotland" left to his widow and pennyless orphans; and, if I mistake not, some legislative enactment, in favour of his children, has redeemed the State of New-York from the opprobrium of ingratitude to the great inventor of steam-power.

Gentlemen, the fame and success of Mr. Burden, reads us a valuable lesson; and we will always find such instances of intripid industry, leaving the rest of mankind far in the rear. Already do we see individuals, resting on their oars, in the possession (as they fondly think) of the particular seed, not reflecting on the fact, that the same principle of nature, which created the variety, will assuredly destroy it, if care be not taken to propagate the peculiarity; and I will vouch for it, that the enlightened individual, in question, would be the last person to support the doctrine, which is now very generally maintained, that the superiority of the staple, depends exclusively on the character of the seed. I am satisfied, that he cannot be ignorant of the congeniality of certain soils and localities, in aiding the attentive exertions of the industrious planter, towards perfecting this universally useful plant.

Finally, I must draw your attention to an evil most withering in its influence on the planting interest. I allude to the habit of gentlemen absenting themselves from their plantations, during the summer months, and giving up all the time and solid comforts of a country life for the noisy and indolent existence they drag out in the city gossip. In every neighbourhood, where summer residences have been resorted to, the increased prosperity of the planter, has followed as a matter of course, and the health and comfort of the labouring class have been obviously improved. This last consideration has become more deeply important, from the late melancholy importation on our borders of the Asiatic Plague; our property and improvements, left to the ravages of ignorant overseers, must necessarily exhibit a picture of ruinous waste.

It would impart new life to Southern Agriculture, were gentlemen to appropriate their sons particularly to this branch of Science, with a view to their future profession. Indeed, the incompetency of overseers in general, seems loudly to call for the application of this remedy; and our legislature could not confer a greater blessing upon the good people of this State, than by the establishment of an agricultural Professorship, attached to the College. Great patronage is extended to Theological, Medical and Literary institutions, whilst that Science which puts bread in every body's mouth, is left to the blind grooping of the ignorant. Should such a Professorship ever be established, under-schools would immediately spring up in every neighbourhood, as preparatory to this course; and we would soon see it become honourable for the sons of landed proprietors, to seek eminence in the vocation of their parents, avowedly as profession; which from the ridiculous caprice of present fashion, is only considered creditable when connected with the inheritance or possession of property; instead of decayed scions of decayed estates, we should then see enterprizing, energetic young men, springing up in every quarter to represent the character of the Carolina planter, with dignity and respectability. The intellectual emulation, which would thus be excited, would have a tendency to drive from our honourable calling, the *drones* of *society;* and the name of the *planter* would then become synonimous with that of the educated *gentleman.*

[Mr. Horace Walpole, of Johns' Island, alluded to in the foregoing Address, (page 229,) is conducting an experiment, which (if successful) will form a valuable contribution to the agricultural interest of the South, by its great saving of labour, its economy of manure; and from its enabling the planter to cultivate his grounds yearly, thereby superseding the wasteful appropriation of capital in extensive tracts of land.—*Ed. So. Agr.*]

On the facility of making Experiments, and exactness necessary to render them profitable.

To the Editor of the Southern Agriculturist.

Sir,—It is so long since I wrote my first article, (in which I promised to write again) that in all probability all that I then said has been forgotten. It was my intention to have followed up that article with some other suggestions, but, as I then said, I only write when the spirit moves me; and other occupations have kept my mind so

engaged that I have scarce ever thought of my promise; but, as I have somethings yet to say, I will avail myself of a little time I have to spare, to make one or two observations, relative to what strikes me as deserving of attention by our planters.

I have already made some remarks on the just apportionment of crops, and of labour on plantations,* and have endeavoured to point out the errors and the remedy; whether I have succeeded or not is for those to whom these remarks were addressed to determine. The next subject I shall call the attention of our planters to, is the *want of proper attention to and exactness in making experiments.* There are few of the intelligent portion of our agriculturists who have it not in their power annually to make several experiments, without interfering with the regular crops, in such a manner as to be worthy of notice, and by many, such experiments are made, but, owing to a want of proper attention to them and exactness in making and ascertaining the result, they prove of no avail.

That experiments can be made on a portion of a crop, without materially affecting the product of the whole can admit of no doubt. To make myself better understood, I will suppose that a planter wishes to ascertain *whether the cutting off of the tops of his corn lessens the product.* Let him select a quarter of an acre, or even an eighth, and let him divide this into as many portions as he desires to make trials; the first portion to be cut when the silk has dried, another portion when the ear appears fuller and turning yellow, &c. &c. These he can compare with portions of the like size left for that purpose untouched, or with some part of the main crop growing in the neighbourhood.

Again, should he wish to try the effect of a particular manure, or of several, or the application of them in different modes, how easy is it for him to select a spot in any part of his field; the only thing to be attended to, will be that all of that part experimented upon is of the same quality, and is situated alike as to moisture or dryness. The culture should be the same as that bestowed on the rest of the crop, and thus a fair experiment might be made with a very trifling additional trouble, and the total product of the crop not materially affected by either the success

* See Southern Agriculturist, vol. vii. p. 402.

or failure of the experiment; whilst at the same time much valuable informatiou would be gained.

Again, should a planter wish to gain information relative to the *potato* crop, (and there are many points of practice which it is highly desirable to determine) let him select contiguous rows on which to make his experiment. Thus, in one year, a planter has it in his power, to make, at least, a dozen experiments, without putting himself to much inconvenience, and these experiments could be repeated every year until the result was fully established, for it must be borne in mind, that one experiment does not establish any thing—the time of planting—the season, or even the quality of the soil, may vary the result. It is not, therefore, until after several experiments have fully satisfied him of the result that a planter should vary his ordinary practice, in order to conform to what his experiments have proved to be better.

But, there are number of planters, who make annually, such experiments as I have detailed above, who are no wiser at the termination than they were at the commencement; nay, further, are sometimes misled by them; and this will ever be the case as long as they are conducted in the *helter skelter* manner in which but too often they are. What possible good can any one expect to derive from an experiment, unless he is exact in making it, and recording all the particulars relative to it. But, unfortnuately, few attend to this, and if you inquire of them the result, you will discover very often that they have but a very indefinate idea about the whole matter, and have not satisfied themselves whether it ought to be adopted or rejected; and on the whole, think it best to stick to the old plan, as they have done tolerably well hitherto. Now, if it be worth while making an experiment at all, it is certainly worth making it as it should be, or there is actually a loss incurred; inasmuch, as some little additional trouble must be taken, and there is the many visits which are made to it, and the perplexity it occasions in consequence of nothing sausfactory being ascertained. Now, it is quite easy for a planter to avoid all this, and to get well paid for his labour. Let him keep a small memorandum book in his pocket, in which let him note every thing which is done, and the appearance of the different parcels, when compared with each other and the general crop: let him also note his opinions

at the moment, which he can afterwards correct, should he find that he was in error; this noting down the impressions of the moment, is of more importance than most planters attach to it. Let him, moreover, be very particular in detailing the work done, the time when and the manner it was done; and, at the conclusion, let him be extremely careful and exact in ascertaining the result. Let him not, as unfortunately is but too often the case, be satisfied with the apparent result; if he does, he will be often deceived; and what is more, he will deserve it. On the contrary, let him either measure or weigh (the latter is decidedly to be preferred) the product of every experiment, and always an equal quantity of the main crop, in order that they may be compared. In a small experiment the difference of a few pounds, nay, even ounces, will make a material difference in the product of a field; yet, this would not be perceptible to the eye, and in deciding in that way, what errors may be committed. Is it not the height of folly to act thus, and yet many of our planters make no other experiment, and live and die, without profiting either themselves or their neighbours, by any improvement. This, as we all know, will not be owing to the state of perfection to which agriculture is at present brought, for I believe it is more defective and more has yet to be ascertained, relative to it, than any other sciecne. I am, &c.

A RETIRED PLANTER.

Rural Scenery.

" To deck the shapeless knole,
That softly swell'd and gayly dress'd appears
A flow'ry island, from the dark green lawn
Emerging, must be deem'd a labour due
To no mean hand, and asks the touch of taste.
Here also grateful mixture of well matched
And sorted hues (each giving each relief,
And by contrasted beauty shining more)
Is needful"—

COWPER'S GARDEN.

To our late remarks on Rural Buildings, in which we commented on the benefits attending comfortable homes on farm establishments, we will now add some notices, on the pleasures and advantages which arise from a taste for rural scenery.

We are by no means disposed to advocate extravagant and romantic fancies which place happiness in solitudes or in the contemplation of wild scenery; but there is a calm, and we might add, natural pleasure derived from viewing a well cultivated country, which is based on reason and has cheerfulness for its hand-maiden. Such a prospect speaks volumes in favour of the condition of the population, and is, therefore, delightful to the heart of the philanthropist. But it is our object now to shew, that every farmer should endeavour to dress up such a prospect around his dwelling. His well arranged fields and pastures intermingled with copses of trees, would not fail to awaken each a cheerful landscape, and call with it, into existence all the agreeable associations we have alluded to. Mr. Addison, in his remarks on gardens, speaks of the Chinese taste in them, and commends its conformity to nature. Large Chinese gardens, even those of the Emperor, are imitations of natural scenery—and he adds—"But why may not a whole estate be thrown 'into a kind of garden by frequent plantations, that may 'turn as much to the profit, as the pleasure of the owner? 'A marsh overgrown with willows, or a mountain shaded 'with oaks, are not only more beautiful, but more bene-'ficial, than when they lie bare and unadorned. Fields 'of corn make a pleasant prospect; and if the walks were 'a little taken care of, that lie between them, if the natu-'ral embroidery of the meadow were helped and impro-'ved by some small additions of art, and the several rows 'of hedges set off by trees and flowers, that the soil was 'capable of receiving, a man might make a pretty land-'scape of his own possessions:" *(Spec. No.* 414.*)*

Mr. Walpole, in speaking of the improvements made by Kent, says: Kent found English gardening to consist in, terraces, statues, clipped trees, and regular walks; all inclosed by high walls he jumped the walls and found all nature a garden. It is pleasant to find, therefore, that man, in the pursuit of his appropriate labours, decks the landscape in the very best taste, and that every well cultivated farm and plantation may be made in itself such a scene. Who that has had the pleasure of travelling in the German settlements in Pennsylvania, can forget the pleasing prospects of this description, frequently formed like pictures on the hill sides, especially in the season when the ruddy buckwheat patches, contrast with the verdure and

yellow of the surrounding fields. In that country, too, it is common to leave strips of wood, conveniently situated for repairing the fences, without the trouble of much carting—and these clusters improve the landscape very much. We, however, have decided advantages, as to the ornaments resulting from our cultivation. Our cotton-fields, at one period are as gaudy, with their innumerable crimson and yellow blossoms as the richest tulip bed; and again, at another time of a snowy whiteness that cannot be surpassed, when not disfigured by decayed trees, which are so often left to perish and fall in them to the danger of the labourers and the injury of the health of the neighbourhood. The sprightly waving, too, of the fields of maize often of great extent, is striking and beautiful. These objects from being familiar to us, are generally overlooked, but before the added beauty of the cotton-plant appeared among us our luxuriant rice-fields and meadows, like savannahs, excited the enthusiasm of the poet. Mr. Barlow, in his Vision of Columbus: a poem which he has in a great measure inserted in his epic, thus describes them—

> "When southern streams through broad savannahs bend
> The rice-clad-fields their verdant rounds extend,
> Tobago's plant, the leaf expanding yields,
> The maize luxuriant clothes a thousand fields."

Our forests, too, afford trees that variegate the woods very agreeably. The calico, fringe, dog-wood and red-bud, whose blossoms are beautiful, and some of them of the richest tints, mingle pleasantly with the deep verdure of the pine and other trees. In autumn, no Turkey carpet can shew brighter or greater variety of colours, and even in the winter, (usually so moderate in our climate) so numerous are the evergreens of natural growth, that on the pleasant days in that season, we are deluded into the belief of the presence of spring. Our orchards, moreover, especially of plums and peaches, show such rich masses of blossoms in the spring; and such finely coloured fruits in the summer and fall, nothing can be more beautiful. The fragrance of the orange blossoms in some of the lower districts, perfume the air to a great distance, and its golden fruit, adhere with such tenacity as if conscious of the ornament they bestow. The magnificence of our woods in growth and foliage is unrivalled. The proudly spread-

ing live-oak, that waves its wide horizontal limbs, richly hung with tresses of moss, the grand magnolia, and lofty pines, that like stately columns, lift themselves on high, are but a few of their impressive features. We have said nothing of the numerous flowers that enamel our grounds, or hang on the festoons of vines from tree to tree. Indeed, no country should excel the Southern States in rural scenery; exhaustless supplies for this purpose are found near every dwelling, and in the surrounding woods. All that is required, is a little arrangement of them, which is an employment of so little labour and so agreeable, we are at a loss to account for its being so much neglected. We fear it is in a measure attributable to that bane of our land, the disposition to emigration. It is useless to adorn a place from which it is intended to remove, in the same manner, as it is thought useless to make repairs on buildings, which are about to be deserted. But when a hearty and resolute determination exists to make the most of our homes, such objects near them will add to our pleasures, and make them daily more dear to us. SINCLAIR.

On Emigration to the Western Country.

Columbia, (S. C.) April 11, 1835.

To the Editor of the Southern Agriculturist.

Sir,—I was glad to see this subject so ably treated, as at page 128 of your number for last March, and it is desirable that the very able and most respectable author of the piece will continue to discuss the same subject, and that it will have, at least, partially, the desired effect. Were that gentleman situated as I am, on one of the principal roads leading to the West, he would see that the evil exists to such magnitude as would give serious alarm to his patriotism, and excite him to make great exertions to expose the disappointments of the emigrants, and propose means that might put a stop to so great an evil.

It is most true, that the general mode of cultivation in this State, is the best calculated to ruin the cultivator by exhausting his land; but it is likewise true, that the exhaustion of the soil is not an unavoidable evil, and that even the exhausted fields are susceptible of being restored to their primitive fertility; although it is undoubtedly more easy and economical to prevent the evil than to re-

medy it. We have, I believe, the means and materials within our power, and it only requires some little exertion on our part, and a determined will to effect either or both, when we add to this that there is yet a sufficient quantity of land, uncultivated, in this State, to maintain in affluence a population twice or three times greater than our present one. Do fathers of family reflect, when they remove to the West, that they condemn their posterity for two or three generations, to the ills and hardships to which frontier countries are necessarily exposed, to a state short of barbarism, destitute of that amenity which has been the delight of their lives?

It must be admitted, that in those new western lands, a planter with a given force, can make more cotton, and therefore, more money than in South-Carolina. I admit, also, that cotton and money are two very good and convenient things; but I deny most positively, that they are the only good things attainable in this world. A little less money and more happiness, comfort and ease are to my taste much preferable to little or none of the latter, to a most copious abundance of the former. As we all think our tastes are the best, those who think as I do, prefer the endearments of a long established home, the cordial intercourse between neighbours who know, esteem and love one another. The very sight of the spots where we have spent the happy days of our childhood, a ramble through the woods where we made our first trials with our fowling piece, of the brook and pond where we used to bathe, and exulted in our prowess in catching the first minnow, &c. &c. produce more innocent contentment and pleasure, than the hoarding a large sum of money until we can so dispose of it as to produce more money; forgetting that the only legitimate use of money is to render it subservient to our happiness, and that of all that surround us, whether our children, servants, or the very brutes of which we exact labour and food.

"Sous les lambris dorés des celestes portiques,
Vous regretterez quelques fois
Nos danses, nos concerts rustiques,
Ah! revenez alors habiter dans nos bois;
Vous y retrouverez la paix de l'innocence.
Venez cueillir des fleurs au bord de ce ruisseau,
Venez vous reposer sous ce même berceau
Témoins des jeur de votre enfance.

Là, vous rappellerez le songe du bonheur;
Là, vous sentirez votre cœur
Respirer avec plus d'aisance;
Là, vos regards charmés croiront, autour de vous,
Voir se multiplier les fleurs sur la verdure;
Le ciel sera plus beau, la naïade plus pure,
L'ombrage plus épais, et le zéphyr plus doux.
Là, vous retrouverez la source de ces larmes
Qu'on ne verse plus chez les dieux;
Et vous éprouverez ce qu'on goûte de charmes
A regretter le temps où l'on étoit heureux."

I have been drawn unwittingly into a train of thoughts that carried me far away from the immediate object intended. How can I speak of manure after the preceding quotation? Yet I must; but can do so only as briefly as I can.

It was mentioned above, that we had the means and materials for preventing and remedying the exhaustion of our land. Our forests offer us a most abundant supply of leaves and other vegetable matter, we have cattle in more than sufficient number, *(though we get our beef from abroad!)* Our sea-coast is bordered with inexhaustible beds of salt-marsh, and our rivers with swamps, from which we could, with a little industry, enrich a territory three times the extent of our State, and last, though not least, we have calcareous earths in various forms, from the oyster-shell in our sea, the inexhaustible beds of marle, or old sea-shells for sixty or seventy miles from the coast, to the marbles and other limestones in the upper country. The most excellent effects of the use of lime in its different modes as a manure, are not sufficiently known. It is believed to be the most permanent of all manures, and a field judiciously ameliorated by it, will under only tolerable management, show the good effects for an incredible number of years, and with a good system will not deteriorate; but will go on increasing in fertility the more it is cultivated. There is another advantage in the free use of calcareous earths for manures, that is not sufficiently adverted to: it is, that it has a greater tendency than any thing else to increase the healthfulness of the country; and it will also render that which is sickly, perfectly wholesome. Its manner of operating these beneficial effects, have, perhaps, never been fully developed, and I am not chemist enough to explain it; that it is a fact is sufficient-

ly established by the old practice of throwing lime into those places from which bad smells are apprehended. Hence, also, the practice of covering with lime the dead bodies buried in churches, and the use made of it for a like purpose in shambles, as also, in such places where much fermentation is going on, where the deadly carbonic acid gas is readily rendered inoffensive by a sprinkling of lime. The case of the city of Mobile might also be cited as having been rendered, from very sickly to very healthy, by its streets being covered with shells; and I presume, that the healthfulness of St. Augustine may be attributed to the same cause.

This part of the subject induces me to recommend to the attention of all inhabitants of cities, or of the country, as planters or farmers, an essay on calcareous manures, of which, I am informed, a second edition, much augmented and improved, is now in the press under the care of its author, Edmund Ruffin, the most worthy and industrious editor of the *Farmer's Register*, published at Shellbanks, Virginia. It is hoped that the publication of this book, if it be sufficiently disseminated, will form a new era in our agriculture; for, although the use of lime as a manure, is by no means a new thing, it is scarcely, if at all, used here, where it is most needed.

I am, Sir, very respectfully, your obed't. serv't.

N. HERBEMONT.

Remarks on the Last Winter; by the EDITOR.

THE remarkable severity of the latter part of the last winter and commencement of the present spring, in this climate, is worthy of record. It is not within the recollection of our oldest inhabitants, that the severity of the cold was so intense, and its destruction of the vegetable world so complete. Our ordinary severe weather very seldom makes its appearance until January, and very frequently the weather is so mild at Christmas as to render the use of fires unnecessary, and free access of air agreeable. But the early part of last winter, although not very remarkable, differed very essentially from that to which we were accustomed. We had more than our usual quantity of rain, but its effects were always dissipated by the warmth and genial influence of bright sunny days. This only prepared our systems for the unpleasant

influence of what followed. By rousing the vegetable world from its torper, the way was prepared for that devastation and havoc, which spread far and wide.*— During the early part of February, the weather was mild and presented no indications of an unusual character, until past 9 o'clock on the night of February 6th, when the thermometer stood at 48 degrees having increased since 7 o'clock in the morning from 40 degrees, at a more advanced period of the night, a very severe change took place, producing showers of sleet which fell at short intervals. The succeeding day the weather moderated, and although cool, the influence of a bright sun rendered the temperature agreeable until towards evening, when old Boreas sent forth a chilling blast from the North-east, approaching to a pretty severe gale, diminished the temperature down to 20 degrees at 9 o'clock, P. M. This was succeeded by Sunday the 8th, a day, although unusually bright, yet even the influence of a cloudless sky, and an unusual bright sun, could not prevent constant freezing throughout the day. The thermometer stood after sunrise 5 degrees above *zero*, leaving scarcely any doubt that it must have been at zero previous to daylight. It is stated by many that wine and porter, in bottles, assumed a solid form. The salt-water in the docks, and mill-ponds, in the neighbourhood of the city, was frozen. Plants that had remained in a small room in which there had been a large coal fire the whole day and until 11 o'clock at night, were totally destroyed, and the water in the hyacinth glasses standing upon the mantle-piece became congealed, and what is remarkable, a plant of the *Cactus* tribe in a small pot, standing near them, remained uninjured, although liable to be destroyed by a slight frost. The green-houses in Charleston and its vicinity, afforded no protection to exotics, the destruction amongst these was complete, with the exception tion only of those of Mr. Nicholson, of Cannonsborough. Fig-trees that have withstood the freezing tempests of years, are all killed to the roots. Peach trees that stand the severity of the northern winters, although not destroyed, have been so much injured in their fruit-buds, as

* The end of the year 1834, the temperature was moderate and uniform. On the 4th of January, 1835, a considerable change occurred; there was sleet on the 4th and 5th, with the thermometer in a sheltered situation from 34° to 35°, and the weather continued cold, tempestuous, and rainy during the greater part of the month. On the 15th, 25th, 27th and 29th, the rain was accompanied with thunder, and the weather became mild until the 5th of February.

to afford but poor prospect of abundance this year. All our beautiful myrtles, that for years had bent beneath ponderous *icicles*, present now a melancholy appearance, of the destructive influence of our extraordinary winter. March that usually assumed the gay smiles of Spring, and sent forth her myriads of blossoms and flowers contrasted with the lively green that carpeted the surface of the earth, now yields a melancholy aspect; such as would be afforded by the rapid and destructive march of a desolating fire. And still farther South, we learn that the severe cold has made great havoc in the vicinity of St. Augustine with the fruit-trees. The orange trees which were expected to yield a bountiful harvest this year, it is said will not yield a single orange. A large portion of them are entirely destroyed, and the remainder partially so; and of the lemons and limes, not a tree is left alive. The loss is estimated at $300,000; and that the sugar planter's prospects in Louisiana, for the next year are entirely prostrated, the seed-cane having been destroyed; the ratoons are all destroyed, and it is affirmed, that another such winter will compel the planter to abandon the culture of sugar.

Dr. Ramsay in his Sketches of South-Carolina, gives the following account, "That since 1791, the mercury in the thermometer had never been under 28, although in 1752, it was down to 18." Mr. Hewitt, in his Historical Account of South-Carolina, asserts, "That he had seen the mercury in Fahrenheit's thermometer down to 16; and that others had observed it as low as 10. The greatest cold in 1791, was 28, in '92, 30, in '93, 30, in '94, 34, in '95, 29; but in the year 1750, it was 25, in 1751, it was 23, in 1752, it was 18," to which we may add, and on the 8th of February, 1835, it was 5 degrees. If it had ever been as low as this before, we think a fact so remarkable would have been recorded, and what strengthens this, Mr. Hewitt thinks it worthy of note to remark that of 1752, leaving an inference that that point is the lowest it was ever known to have been at before.

It is also worthy of record, that on the night of Wednesday, the 11th of March, it commenced sleeting, and continued pretty generally throughout the night; on the next day snow fell in abundance, at intervals, which covered the whole surface of the ground, and that portion of it that was sheltered from the sun, remained several days without thawing.

Effectual Cure for the Bots in Horses.

To the Editor of the Southern Agriculturist.

Dear Sir,—My attention was drawn to an article on "Bots," in the Southern Agriculturist, for October, 1834, page 554, and as every thing connected with the health of the human species has engaged my attention for the last forty years, and as the horse is one of the most noble and useful among our domestic animals, I have long desired to discover a remedy for the eradicating these insects. While travelling last February up the country for my health, I stopped at a plantation near Orangeburg, I found the family deeply dejected in consequence of the situation of one of their most valued horses, who appeared to be dying with bots.

An elderly person came up and prescribed the following drench, which was averred to have been used an hundred times with infallible success. It was so simple that I had my doubts; these, however, soon gave way to supprise and pleasure, when in the space of 4 or 5 hours, I saw the noble animal withdraw his drooping head from his flanks, looked lively, arose on his feet, shook himself briskly, the drench operated with great force, the bots were dislodged and discharged, and the horse was galloping around the yard the next morning with great spirit.

The drench was prepared as follows: a common gourd (Genus, *cucurbita*. Spe. *langenaria,)* commonly called calabash, and are used for water dippers, &c. The one used on this occason, was of the capacity of a pint bottle, it was sawed in two, and the peth or pulp, or as it is sometimes termed the guts, was put into a pot and three pints of water added to it, it was then set on the fire and boiled to the consumption of one half the water; it was then strained, and a pint of molasses added, and suffered to cool; this mixture was put into a common porter bottle, well shook and given to the horse as a drench, and produced the happy effects above enumerated. The pulp of our common gourds are among our most powerful cathartics. I have known watery infusions of the pulp to be a domestic remedy for worms in the domestic practice of several planters in the district among their little negroes. It resembles in its taste and operations, the *coloquintida*, or bitter apple of the shops.

If you think this communication worthy of a place in your valuable publication, it is at your service.

AGRICOLA.

PART II.

SELECTIONS.

A few remarks on the New Theory of the Deposition of Dew.

[FROM THE LONDON HORTICULTURAL REGISTER]

I PERCEIVE your correspondent, G. I. T.* has, amongst other reforms in science, introduced a total and radical one on the deposition of dew, which is there stated to depend on certain powers possessed by living vegetable bodies as conductors of electricity; entirely overthrowing the ingenious theory of Dr. Wells, which since its discovery has been found fully sufficient to explain all the circumstances attending that phenomenon, and which in my mind, at least, still remains unshaken.

The theory of dew being deposited on plants by their power of conducting the electric fluid, I cannot for a moment entertain, when I consider the simple fact, that silk, wool, and feathers, are all non-conductors, and yet become dewed as readily as plants.

G. I. T. is no doubt fully aware, that it is possible for the surface of the earth to become colder than the surrounding air; for owing to the transparency of the atmosphere to the rays of heat, those rays which are given off by the earth are not again radiated to it by the surrounding air, but are lost in space; and thus it is that the temperature of the surface is lowered.

By your Correspondent's leave, I beg to make a remark or two on the arguments by which this theory is supported. And first, the surface of the ground is *thought* to be changed by some secret agency, in one case it is the attraction, and as the source of heat is "etherial fire" (which I suppose is but another name for caloric) "*that* fire is first attracted by the points of vegetable bodies." Now I suspect the most likely circumstance to attend this absorbtion of heat by any body would surely be, that the temperature of the absorbing body would be raised; yet in direct contradiction to this, we are told that the surface of the earth becomes colder! Also the abstraction of heat, when the clouds are supposed to be the attracting bodies, causes an elevation in the temperature of the earth's surface!

I shall notice but one more of the arguments produced in support of this theory; I allude to that part where the fact of metals not becoming dewed is advanced in proof of this theory, when in truth they always appeared to me to furnish a most convincing proof of the correctness of the theory of Dr. Wells. We read (p. 208, S. A.) of plants

* See page 204 Southern Agriculturist.

"not being endued with the power of radiating or conducting heat in a degree by any means equal to that of metals, substances, which, it is said, do not become dewed at a time and under circumstances wherein the circumjacent herbage is covered with minute drops of water,—a fact which is not only very remarkable in itself, but one which affords convincing proof that plants do *not* become dewed solely by their power of radiating heat." Here plants are said not to possess the power of radiating *or* conducting heat in an equal degree with metals; this to a person uninitiated would appear as though the powers of radiation and conduction were the same, when on the contrary they generally follow an inverse ratio.

Also, instead of metals being better radiators than plants, they are always considered to be the worst radiating bodies known; and *their not becoming dewed is, in* my judgment, *a fact no ways remarkable in itself, but one which* I should say *affords convincing proof that plants do become dewed by their power of radiating heat.*

I cannot, therefore, avoid thinking, that G. I. T. has certainly taken a wrong view of the subject, which is much to be regretted, as I fear from the popularity of the writer, the theory will be apt to mislead the minds of many readers. The only sure path of improvement in Natural Philosophy, is by experimental inquiry, accompanied with close observations of the phenomena of nature.

J. B. Jun.

On the Management of Sheep.

[FROM THE MOUNTAIN SHEPHERD'S MANUAL.]

As published in the London Library of Useful Knowledge.

Shelter.—Shelter is the first thing to be attended to in the management of sheep. While every good shepherd is decidedly hostile to their being confined, or to their being forced into shelter, whether they wish for it or not, it cannot be too strongly recommended to all sheep farmers, to put the means of avoiding the severity of stormy weather with the reach of their flocks at all times. Close confinement injures the health of all animals; and is hurtful in an especial manner to sheep, which, by nature, are of a roving disposition, and exceedingly fond of liberty. It is certainly a mistaken notion that fine woolled sheep are more tender, and more liable to be injured by cold, than those which carry coarse fleeces; and that they must, during the greatest part of the year, be kept in cots, as is practised on the continent. The wool of the fine breeds grows in a manner which renders it more effectual in resisting the rigors of winter, than that of the long coarse kinds.

Merino sheep which have been reckoned the most delicate, have been found capable of bearing very great degrees of cold, without being injured in the slightest degree. Cold, therefore, is not by any means an object of dread to the breeder of any kind of sheep, except during the lambing season, when sudden and severe cold, and chilling rains, are with reason to be feared by every storemaster, as they are fatal to newly dropt lambs of every breed.

Drifting snow, excessive rain, and great heat, are the enemies which, in our climate, chiefly annoy our flocks.

Drifting Snow.—Natural shelter is seldom to be found in a mountainous country, so convenient as to be proof against sudden storms of

snow. Recourse must, therefore, be had to art. There cannot be a better method of enabling sheep to escape from drifting snow than such enclosures as are mentioned by Mr. Hogg. Circular inclosures, surrounded by an earthen wall, will be fully as effectual as those constructed of stones, and will, in most places, be more economical, both in the original cost, and subsequent repairs. The spaces inclosed should be on dry ground, and of moderate size; and the more numerous the better. The base of the walls should be four feet thick, and the top two feet. The height should not be less than six feet. Two or three openings should be left towards the south; and a drain, so constructed as to take off the wetness of the ground, rain water, and that from melted snow, should be dug round the outside, communicating by holes in the wall with the inside of the inclosure. After having been once or twice driven into these inclosures, or rings, the sheep will of their own accord draw towards them on the approach of snow.* The shepherd will always find his flock assembled in the rings during snow, and he will not often have to risk his life by searching for lost sheep among wreaths. Clumps of Scotch firs have been found of great use on some farms; and should be planted wherever they can be easily protected when young; not only for shelter, but for the sake of the thinnings and branches, which are wholesome food for sheep in stormy weather.

In gentlemen's parks, and on low grounds, where attendance can be constantly afforded, there is less occasion for shelter. Clumps of trees, especially of spruce fir, the foliage of which is closer and more ornamental than that of the Scotch pine, will, however, be found extremely useful.

Rain.—As it is impossible to shelter even small flocks from rain, it is a fortunate circumstance that sheep are not very liable to suffer from it. During summer there is no danger to be apprehended from long continued rain drenching the fleece. But should this happen during winter, weak sheep will most probably suffer greatly. Attention to the health and comfort of sheep at other times, by bringing them to face the severity of winter in a strong habit of body, will be found to be the best method of defending them from rain. Of smearing or salving we shall presently speak.

Heat.—Flies.—In mountainous districts, sheep have it in their power to remove from glens and hollows, where the rays of the sun frequently become oppressive. But on low grounds they are too often left exposed, without having access to a shady place, to the scorching heat of summer, and to the torments inflicted by myriads of flies. The shades of trees, cots, and walls, are sufficient to enable sheep to avoid heat; but their enemies will follow them, and continue their attacks. Some method of keeping off flies should therefore be adopted; or at any rate, of destroying their eggs, which they deposit about the roots of the horns, and other parts of the head, and about the tail. The following ointment, being rubbed about the root of the horns and tail, will be found to be of great use. Strong mercurial ointment, 1 part, rosin, 1 part, hog's lard, 3 parts. Melt the hog's lard in a convenient vessel, and add the rosin. When these ingredients are well incorporated, add the ointment, and stir the whole well till it becomes cold, to prevent the mercury from sinking. The rosin is intended to give some degree of adhesiveness to the composition. The smallest parti-

* Walls are raised in some places in the form of a cross, or of the letter S.

cle of mercury is fatal to an insect. A composition for defending the bodies of sheep will be found under the article *Shearing*. Flies seldom become troublesome till after the time of taking off the fleece. But when sheep appear to be annoyed before that time, the ointment should be applied without delay to the head and tail, and well rubbed on. The proportion of mercury is too small to have any effect on the animal, but is quite sufficient to make flies change their scene of attack, at any rate to destroy their eggs. Rubbing the head and tail with a composition of one pint of tar and four of train oil, has been found to answer the purpose well.

Food.—Variety, or frequent changes, in the nature of food, tend to derange the uniform action of the bowels, and bring on diseases which often prove fatal. During summer and winter, sheep are commonly healthy, when they are not absolutely starved. It is chiefly in spring and autumn when they show symptoms of bad health. Sudden changes in the quality of their food are the most probable causes of the general unhealthiness experienced at these seasons of the year. Such alterations are not more injurious than quick transitions from plenty to scarcity, and from scarcity to plenty. When an animal has been highly fed, and accustomed for a length of time to eat regularly, any sudden alteration in his habits soon occasions disease. On the other hand, nothing is more dangerous to an animal which has been starving, than placing it all at once in the midst of plenty.

Where grass is what is usually called artificial, and consequently as uniform as it is possible for pasture to be, few diseased sheep will ever be found. On meadows and hills, where some parts are moist, and others dry, and where the soil is of different kinds, the quality of the pasture is often found to vary much. Here the only way to avoid risk is to adopt the plan of many skilful shepherds, and to allot different tracts of country to different parts of the flock, and to reserve some districts for shifting; for a change of food is well known to be of the greatest importance, the plants in one district of a farm being succulent, while those on another have ceased to grow; and this holds on different parts of the same tract of country, and varies with elevation. There can be no difficulty in dividing a farm in such a way, that a proper succession of food may always be provided. Sheep cannot endure frequent removals, but are strongly attached to the place of their nativity.

It has been fully ascertained that wet grounds, where water sometimes stagnates, are unfit for sheep pasture, insomuch that the complicated and fatal disease, called rot, always attacks sheep which feed on them. Wet peaty ground is not so dangerous, nor is there much risk when sheep go on land over which water trickles constantly. But lands which have been flooded are sometimes unsafe until they become perfectly dry. In the Highlands of Scotland there are vast ranges of hills, which, even during the driest seasons, are continually moist; yet they do not appear to be injurious to sheep by bringing on the rot. On these the water is in continual motion, and never stagnates.

The neighbourhood of stinking pools of water, and of grounds on which rank grasses grow during the evaporation of stagnant water, should always be avoided. Sheep are fully as liable to the rot in such situations, as the human species is to ague, and other diseases resembling incipient rot.*

* Some interesting particulars connected with this subject are to be found in a pamphlet on the rot, by Dr. Harrison.

The greatest difficulty in the management of sheep occurs at the periods when the season change. Then it becomes necessary on hill farms, not only to diminish the quantity of food, but to give it of a different quality. On the mountains of Scotland, the vegetation of the grasses and heath usually ceases about the end of October. When sudden frosts come on before the vegetation of the grasses has stopped, the leaves are affected, so that when thaw commences, they become flaccid, and rot. When introduced in that state into the stomach of a sheep, or of any other ruminating animal, they are likely to prove injurious. When sheep are forced by a sudden fall of snow to relinquish their ordinary succulent food, the change can hardly fail to hurt their health. Their stomachs and bowels, having been accustomed to the gentle action required for digesting succulent food, are not in a condition to manage what is dry. The slow digestion of dry food makes an alteration in the quantity of fluids secreted, and the whole system is apt to be deranged. The grand object of a shepherd, therefore, ought to be to make the change of food as gradual as possible. He must not be tempted by fine open weather to delay accustoming his flock to an alteration in diet. Winter may come on suddenly, and before the shepherd be aware of them, bring difficulties which he may not be able to overcome. When a continuation of fresh grass cannot be afforded, a wise and skilful shepherd will begin, about the end of October, to move his sheep about, taking them sometimes to dry, heathy grounds, and sometimes to places where the pasture resembles that destined for winter use. The movements should be continued until the usual time for putting the sheep on their wintering ground. The same caution ought to be observed in spring. During winter the stomachs of the sheep will have acquired a stronger action in digesting dry and hard food. If, in this state, they be suddenly filled with young succulent grass, purging will be brought on, and probably more fatal diseases than diarrhœa will attack the flock. In situations where turnips and hay can be raised in sufficient quantities, many dangers and difficulties may be avoided by a proper alternation of these as winter food.

The winter management of a breeding stock, and of a stock for the butcher, are very different things; and yet we see many people treating both in the same way. While sheep, destined for the knife, are kept constantly folded on turnip fields, it would be folly to risk great ewes in the same manner. In such a situation great ewes are very liable to miscarry, and from being obliged to lie dirty and wet, often become unhealthy. In general, the animals destined to pass the winter on turnips, are compelled to eat up every morsel, even unwholesome, dirty, and rotten husks, which they had before left in disgust. But as butchers have no objections to take sheep a little rotten, or otherwise diseased, while they are rather disposed to be fat, this, in the opinion of many, may be of no consequence. But such treatment is highly improper for a breeding stock, as well as folding sheep during the night, without giving them food. They eat almost as much during the night as during the day, and seldom go regularly to rest. They lie down to chew the cud, and to rest during the day, as well as the night time. They should not be allowed to be longer on the turnip field than four or five hours, and should then be driven to the hill, or pasture fields, and brought back to the turnips in the morning.

Smearing and Salving.—Shepherds vary in their answers when asked why they smear their sheep. Some say that it is intended to prevent the scab, some to cure it; others say it is for the purpose of keeping off rain, and some assert that they do it merely to soften the wool. Smearing with a proper composition is certainly useful both to the fleece and the animal which carries it, and answers all the above purposes, and destroys vermin. It has very little effect on coarse fleeces; but as they are long and do not curl so much as the short sheep's wool, smearing may be useful in defending the animals from rain. It is for this purpose that black-faced hogs are smeared. Some breeds of sheep yield a great deal of oily matter, which keeps the wool always soft. On such sheep, too, a larger quantity of the substance, called yolk, is found than on the coarser breeds.

Nothing is so hurtful to wool as tar, in so far as the interests of the manufacturer are concerned, and nothing is more apt to injure sheep, as it is of a very irritating nature, when *injudiciously* employed. It is to be regretted that the interests of the wool-grower and of the manufacturer are not considered the same. The care which attentive shepherds bestow on wool is amply repaid by the health of their sheep, and the price they receive. When used with moderation, tar is a very useful ingredient in the composition for salving. When laid on in a large proportion, it quits the greese with which it was mixed, and accumulates on the sides and bellies of the sheep. Tar is always so full of impurities, that it spoils the color of the wool, and renders scouring a difficult, tedious, and expensive operation, and after all it leaves a stain. It is, therefore, the interest of the grower to seek for a composition into which tar enters in a small proportion, which will have all the effect he desires in smearing; and from its being more easily washed out than the common composition, will enable the manufacturer to afford a better price for the wool on which it has been laid.

Of late, several compositions have been proposed and extensively tried, in which the spirit of tar has been substituted for tar itself. This has, in some cases, been complained of as too irritating, and there is not a doubt that a too free use of spirit of tar is injurious, and even fatal. Some of the salves, while they prove to be perfectly well adapted to flocks that are clean, have been found ineffectual either in curing or in warding off the scab—a disease which the common salve, made of tar and greese, seems effectually to resist. When a flock is perfectly clean, olive oil has been found to be the best substance for softening the fleece and warding off rain and snow. For clean sheep Taylor's salve is also suitable, though some English staplers have condemned it. If a tar salve were made so as to be free from the impurities of the tar, it might probably answer every purpose. The ordinary proportion of one cwt. of grease to a barrel of tar might be increased to one and a half cwt., and when melted together the impurities of the tar might be suffered to subside and be separated. In this way the tar might not leave a stain upon tha wool when scoured. Olive oil seems to impregnate the wool, or to adhere to it more firmly than any other kind of greasy matter; and it has been successfully employed by Mr Seller of Morvich, a first-rate store farmer in Sutherlandshire.

Washing.—In order to put wool into a more marketable condition, it is sometimes washed on the back of the sheep before it is shorn. The animals are made to swim once or twice across a river or pond.

This practice does not appear to injure sheep of any kind, although danger might be apprehended from plunging nurse-ewes into cold water. Washing is not so much attended in Scotland, except in some of the southern parts, as it ought to be. As the fleeces of fine-woolled sheep are not easily penetrated by water, so they take a long time to dry. Washing the wool on their backs may therefore be improper in some cases.

Shearing.—This usually begins with the month of June. There is no part of their business in which common shepherds appear so slovenly as in this. They usually mangle the fleece, and leave the sheep's backs covered with tufts of wool, to the great loss of their masters. The closer wool is clipped the better; and the way to effect this, and to save time, is to take but a small quantity into the shears. It would appear that some sheep which carry the finest fleeces do not naturally shed their wool annually; but ordinary sheep do, and ought to be shorn just before the wool begins to separate. Neatness in shearing can only be acquired by practice. The only rules which can be written are, use shears of a moderate size, and take up very little wool between them. Perhaps it would be an improvement that the shears should have blunt points, which may prevent many accidents, and render the operation easy and expeditious, by giving confidence to the shearer, that he is in no danger of wounding the sheep. After being shorn, sheep are much exposed to the tormenting attacks of flies and other vermin. They should be carefully examined, and all keds, ticks, &c. picked off. The following unguent should then be well rubbed on every part of the animal, with a currying brush. The roots of the horns may be anointed with the composition mentioned under the article Heat. Take of train oil, 4 gallons, imperial, of tar, ½ gallon, imperial, oil of turpentine, 1 pint, imperial.

Dr. Parry recommends the shearing of fine woolled lambs about the beginning of August, having found that the hog fleeces grow finer, when the lamb fleeces have been removed. This practice promises considerable profit; an argument in favor of its adoption, of a very powerful kind. There does not appear to be any danger to be apprehended from the operation at that season of the year; and the wool will have time to grow to a sufficient length, for defending the animal from cold, rain, and snow, before winter sets in. The Doctor attended more than any person in Britain to the subject of wool-growing, and has shown very superior judgment in conducting his experiments. His recommendation goes no farther than to fine-woolled lambs; but those of other breeds may not probably be hurt, if these do not suffer any injury from the operation.

At the time of clipping, and indeed at all other times, when the flock is collected, every individual should be carefully examined; and any wounds or sores should be cleaned and dressed. The feet should be looked at, and every animal which has swelled, or ulcerated limbs, should be separated from the flock. These, and all others which seem to be sickly, should be kept at home until cured. Sheep ought to be collected and examined more frequently than at the usual stated times.

Yolk of Wool.—Until the experiments of that excellent chemist, Vauquelin, were published, the nature of yolk was unknown. He has found it to be an animal soap; and has observed that wool which had remained a long time in its own yolk, swelled up, split, and lost its strength; effects which take place also in too strong soapy water.

'If,' says M. Vauquelin, 'the water of yolk causes wool to swell, and to split in this manner, is it not possible that this accident may often take place on the backs of the animals, especially during damp warm weather, or when they are shut up in folds, the litter of which is not often enough removed? It may not be impossible also that the acridity of yolk may occasion an irritation in their skin, and prove the cause of some of those maladies to which this organ is subject in these animals, and which must occur chiefly during damp warm weather: fortunately at this season they are occasionally exposed to rains which wash them, and carry off at least a part of this matter. In this respect I am inclined to adopt the opinion of those who think that the washing of sheep, during dry warm weather, may be useful to their health, and to the quality of the wool.'

Although every respect is due to so good a chemist as M. Vauquelin, he could have formed his opinion of the effect of yolk on the skin of sheep only from analogy. As common soap is often used with success in cleansing the skin, and curing cutaneous disorders, analogy would lead us to expect that yolk, being of the same nature, would be beneficial instead of being injurious. And it is observed, that fine woolled sheep are less subject to diseases of the skin, than those which carrry coarse fleeces; the former being well supplied with yolk and oil, and the latter having drier wool and little yolk. M. Vauquelin thinks yolk a naturally perspired matter; but it is more probably a combination of the salt in sweat, with the oil of wool.

Putting Rams to Ewes.—The period during which the rams are to go with the ewes must be regulated by climate, and the quantity of spring food provided. It is of great importance that lambs should be dropt as early as possible, that they may not only be well nursed, but have time to get stout, and able to provide for themselves before the winter sets in. It is also of advantage to the ewes, that they may get into good condition before the rutting season.

To secure a full crop of lambs, a proper proportion of tups should be employed, viz. three to one hundred ewes where they are much scattered; but in inclosures two to a hundred are sufficient. They should be left together only so long, that no lambs may be dropt after the middle of May; unless in the case of rearing lambs for the butcher, when matters may be regulated according to circumstances.

Some people rub the breasts of the rams with some pigment, and remove every ewe which has any mark of it as having been served. This, however, is a practice which may occasion much disappointment, as tups often leap without accomplishing their purpose. Both tups and ewes should be in the best possible condition.

Dr. Parry mentions a mode of putting the ewes to the ram, which he believes to have been invented by Bakewell. At the intended season of copulation, the sexual appetite of the ewes is provoked by a ram with an apron. The ewes which are ready, being thus discovered, are brought in succession to the proper ram, which is kept in a yard, or small enclosure, and is allowed to serve each only once. In this manner a shearling ram, well fed, may be sufficient for one hundred or more ewes in one season. This method is certainly to be recommended where any one ram is greatly superior to others in make, and other desirable qualities, relatively to a large number of ewes.

The usual practice on high farms is to collect the ewes, and bring them to the low ground. This harrasses the animals, and spoils the winter pasture. Yet, if they be altogether left at liberty, an inconve-

nient number of rams is required. At this period, the shepherd must be constant in his attendance; and if the weather admit, rather keep the ewes on the higher ground, in detached bodies here and there, according to the nature of the ground and condition of the pasture. Each body of ewes should have a proper proportion of rams along with it; and the shepherd must be careful not to allow the rams to leave the ewes to which they are appropriated. This mode of proceeding appears preferable to any other, and a smaller number of rams will suffice.

Great Ewes—Should be moved about as little as possible; and kept from wet ground, dirty cots, and from every thing apt to injure their health, or disturb them. They are, when heavy, very liable to get cast and unable to rise, and when the shepherd discovers them in this situation, he should approach them with caution, and lift them gently. When a ewe has miscarried, it will be proper, if the weather be severe, or very cold, to bring her into a cot, and to keep her there till recovered; but during mild dry weather, she will be as well in the open air. When about to yean, the ewes should be on the smoothest and driest ground, both for their own convenience, and that of their lambs when dropt. Nurse ewes should have the best pastures.

Lambs—When observed to drop on a place where they cannot easily rise, should be lifted and placed on their feet, but otherwise they may be left to themselves. They may be docked when a day or two old, which saves much trouble when the disease called pinding attacks them. Docking makes them look very lively, as, while they are at their frisking time of life, their stumps have commonly a set or cock. The tail, which seems to be a useless and inconvenient appendage, (though some farmers are of a different opinion,) need not be left longer than three inches. But this operation in the males, if pinding does not happen, should be deferred until the time for castration. Ewes which have been docked are not liable to loose their lambs by their being entangled by the tail at birth, an accident which happens much more frequently than shepherds are aware of.

Lambs that are in health are always lively. Such as do not appear to be inclined to sport with their fellows, should be looked at, and also their dams. Ewes which appear unkind to their lambs should also be examined. In these cases something will in general be found to be wrong. Distorted, or imperfect lambs should be sold, or killed for home consumption.

When a lamb dies, it should be slowly dragged home, and the ewe will follow, when she may be put into a house where a twin lamb from another ewe may be given her; as soon as she has permitted it to suck, they may be sent out.

Weaning Lambs.—Lambs should be allowed to suck during three months and a half, after which they may be taken up, and kept for a fortnight or three weeks at a distance from their dams; far enough from them to prevent their bleating being heard. In general, sale lambs are not taken up till they are removed by the purchaser, and are taken away at once. Some wean their lambs about the middle of July, deeming it of importance to accustom them to a change of food before the season arrives when braxy is likely to prevail. One seldom fails when advice is taken from nature; and therefore it may be time enough to remove the lambs early in August.

Many are in the habit of milking their ewes after the lambs are taken up. It may be proper to take the milk from them once or twice

at the interval of two days; but it is a bad practice to milk them for a length of time, as this hinders their getting into good condition before the rutting season.

Vermin on Lambs.—In the event that lambs become troubled by vermin before smearing time, the following directions of Dr. Parry will be found useful. The *hippobosca ovina*, or *tick*, is extremely injurious to sheep, by making the animal bite and rub itself, so as not only to hurt the fleece, but to break the skin; in consequence of which the fly is apt to fix on the wool near the wounded part, and there deposit its eggs. This troublesome animal may be, in a great measure, destroyed by a solution of white arsenic in powder, made in boiling water, in the proportion of an ounce to a gallon, and poured, when cold, on the back of the sheep, and letting it diffuse itself down the skin on each side: in this method, however, several of the ticks escape by crawling to the extremities of the filaments. It will be still better to wash the lambs in the autumn, whether shorn or not, in a tub of a similar mixture. For this purpose, three pounds of the same arsenic in powder may be dissolved in six gallons of boiling water, and the solution mixed with forty gallons of cold water. The whole being then well stirred with a stick, the lambs may be plunged into it, great care being taken that they do not dip their heads, or taste the water. The liquor must be squeezed out of their fleeces back into the vessel, in order that it may not be wasted. It is scarcely needful to point out the poisonous qualities of this liquid, and how important it is to keep the vessel locked up, and after the operations are performed, to clean it well; or, rather never to use it for any other purpose; and to throw the liquid which remains where not the smallest quantity of it can be drank by any creature whose life we value. Infusion of tobacco is equally effective, but not so economical.

Destruction of Foxes and Birds of Prey.—Notwithstanding the very great losses which are annually experienced from the ravages of foxes, and of eagles and other birds, little ingenuity has been exerted to devise means of destroying them. It would be better for sheep-farmers to have fox-catchers than fox-hunters; and with very little trouble every one of their shepherds may be made much more useful in destroying these animals than the ordinary fox-hunters, and that without interfering with their attendance on the flocks—nothing more is required than to put the means into their power, and to hold out some reward proportioned to their success.

Various pit-falls might be contrived for taking foxes; but poison and stamps are the most effectual instruments of destruction when properly employed, both for foxes and birds of prey. Of the different poisons used for killing vermin, arsenic, *nux vomica*, and corrosive sublimate are the most powerful. Whoever chooses to adopt the following method of using them will not probably have any cause for seeking a better one.

Take the carcase of a sheep that may have died, and having removed the skin, fasten it to the ground in some open place, with the back uppermost. Make cross and deep incisions into the fleshy parts, so that the squares made by the cuts do not exceed an inch and a half. Separate each piece nearly from the bone, but not altogether. Then make one or two punctures with a penknife, an inch and a half deep into each piece, and fill them nearly full of a mixture of equal parts of corrosive sublimate and arsenic, or with *nux vomica*, previously

made into a paste with honey, or sugar, or treacle. Put all the squares into their natural position, and leave the place.

When a fox, or an eagle, or a parcel of ravens, or crows, attack the carcase, they will not find much difficulty in tearing off the flesh; and in the hurry of competition for the largest share, they will gobble up the poisoned pieces entire, and soon die. When a carcase is poisoned without cutting it as here directed, the poison is apt to be lost while the animals are employed in tearing off the flesh. By fastening the carcase to the ground, the pieces of flesh will come easily off.

Should the shepherd be anxious to catch the animals, let him fasten a good strong fish-hook of a moderate size in each piece of flesh, which must, in this case, be entirely separated from the bone, and need not be poisoned. By fastening the hooks to the ribs of the carcase by means of strong wire, both foxes and eagles may be caught. The common pike hook will answer very well, but a much smaller size will do for birds. Dogs must be kept out of the way; but if any strange cur should be prawling about in search of a lamb, or a leg of mutton, and stumble upon the baits, he will meet the fate he deserves. It will be proper to select for the baits places where sheep do not feed, such as bare moss or gravel, or some banks at the sides of streams.

If there be opportunity for instructing shepherds in the use of stamps, and if each has five or six of them, and a premium be offered, they will clear a district of vermin in no long time; and in proportion to the destruction of vermin, game, moles, and mice will multiply; and it is known that where these abound, foxes kill no sheep. Fox-hunters are a perfect nuisance, and literally oppress store-farmers, in many districts, with the maintenance of themselves and dogs, and they do not clear the country of vermin. It appears as if, in some cases, the profession of a fox-hunter were adopted to cover that of a poacher. Shepherds have had long enough experience to justify the trial of some new plan. The writer strongly recommends the formation of associations of landlords and tenants, for the express purpose of encouraging the use of stamps and poison.

Rearing Silk Worms.

[From a Treatise by G. H. Cobb, A. M.; published by direction of his Excellency Governor Lincoln, agreeably to a resolve of the commonwealth. (2000 copies have been purchased for distribution by the Congress of the United States.) The author has "now in operation at Dedham, (Mass.) all the requisite machinery for manufacturing various kinds of silk stuffs. 300 lbs. of raw silk was manufactured by him in 1833, although since the repeal of duties on silk goods, he has been obliged to confine his attention to sewings, and such narrow goods as will sell to a profit."]

The silk insect affords a display of the wisdom of Divine Providence in the adaptation of means to ends, calculated to excite high interest and admiration.

The extraordinary effect produced by this little animal in the short space of six weeks, is no less than the conversion of the vegetable substance of the mulberry leaf, into threads of rich and durable silk. Well might the Emperor Justinian be astonished to find that the rich and beautiful material of his magnificent robes was first produced and worn by this feeble insect; and well might he repay with munificence

the monks by whose exertions the eggs of the silk worm were smuggled in a hollow cane from India to Constantinople. This hollow cane was the ark whence came out the germ of those numerous tribes of this insect, which have spread over the whole of Europe, and whose descendants are now fast settling in these United States. Let us commence with the eggs of this insect, and trace its operations, its wants, and various changes, till it forms the cocoon, from which proceeds the moth, which in its turn produces the egg.

The Eggs.—The eggs are of small size. When first laid, they are of a pale yellow colour, but in three or four days turn to a light slate colour, and subsequently to a dull brownish slate color. Those which remain yellow, have not been fecu ndated, and of course are worthless. The most proper place for keeping the eggs until they are wanted for hatching, is a dry cellar. They should be kept in a tight box, to protect them from mice or insects, and dry, so that the mould and mildew may not injure them.

The Hatching, Leaves, &c.—The advance of the season determines the time of hatching the eggs. As soon as the leaf of the mulberry begins to unfold, and you observe that there is a prospect of having a sufficient quantity of food, it is time to expose the eggs to hatch. No other process is necessary, than to expose them to the air in a room; they hatch voluntarily in a day or two after the exposure. Various modes are adopted in Europe—hatching them in ovens, carrying them about the person, &c,—but nothing of that kind is necessary here.

It is best to preserve those insects for rearing, that come out as nearly at the same time as possible. As soon as the worms begin to appear, lay over them young and tender mulberry leaves; they will soon attach themselves to the leaves, and by taking hold of the stems of the leaves, you may remove them easily. They ought now to be supplied with fresh tender leaves three times a day. As the leaves when very young will dry so much in a short time if exposed to the air as to be unfit for use, you may put them in a glazed vessel, or keep them covered in a cellar or cool place: by which means the leaves may be kept good for two or three days.* Besides, it is well to have always in your house at a time, a stock of leaves sufficient at least for three days provision for your worms, in case of wet weather. If leaves are given when wet, they will cause disease. Be careful never to pull the leaves when wet, either with rain or dew, except on absolute necessity, and in that case you must spread them and turn them, that the leaves may be perfectly dry before you give them to the worms; rats, mice, spiders, ants and fowls. are very destructive to the worms; care must be taken therefore to keep them out of the way of all such enemies.

The Nursery, Shelves, &c.—In Europe, laboratories have been constructed with great care and expense; but however convenient these may be, they are by no means necessary to success in rearing silk worms; almost any building will answer for that purpose. I have reared them myself with success in a barn, in my cellar, kitchen, and

* Mr. D'H. proposes the following method to preserve leaves: Put them under cover on a brick pavement, or gravelled floor; turn them over-and place them further where it is not damp, (for they always leave a dampness where they lie) three or four times a day, or an hour before you feed the worms, you may thus keep them three or four days. The leaf wants air to keep fresh.

other rooms of my dwelling house, and in the lower story of Tremont House in Boston. It was found in France, that the cocoons brought to market by the peasants, raised in hovels so full of cracks as easily to be seen through, and to admit the air freely, were richer and heavier than those reared in palaces, and in the confined rooms of dwellings in cities.* The apparatus of the Rev. Mr. Swain, I should think might be worth adopting, for those who are beginning on a small scale; in fact I have had something like it constructed for my own use. This apparatus consists of a wooden frame, four feet two inches high, each side; sixteen inches and a half wide, divided into eight partitions by small pieces of wood, which form grooves in which the slides run, and are thus easily thrust in, or drawn out of the frame.

The upper side is of paper only, and designed to receive the worms as soon as hatched; the others are of wicker work, the opening being about a quarter of an inch square; under each of these are slides. This occupies little space and is neat, and the persons using it can easily remove the litter, I have used three tiers of rough pine boards fixed upon upright posts, about four feet in width, one above the other, with a space between of two and a half feet, affording room sufficient to pass all round the frame, so that I could conveniently reach any part of it. In making the shelves, it is well to have the lowest one six inches broader than the one above it, and to make the same difference in the other shelves above, so as to break the fall of such worms as happen to tumble down. A good form for the shelves, is that adopted by Mr. J. Y. Tomkins of Baltimore, and which I saw in the nursery of Gideon B. Smith, Esq. of that place. It is about 2½ feet wide, by five or six long, made of thin boards, with a piece two inches wide nailed flat on the upper edge along the sides and ends, with legs about a foot long in the corners. The legs do not pass through the table, but leave a part of the whole on the upper side for the feet of another table to set in. Thus contrived, five or six of these tables are set one above another, and are taken down, cleaned and again set up with facility. One of these shelves will accommodate 500 worms.† It might be as well to put old newspapers on the shelves, which might be taken off whenever it was necessary to clean the worms, and then replaced.—This I have done.

The different ages, Moultings, &c.—There are several varieties of silk worms, (I would recommend, as most profitable for rearing, the large white.) The most common varieties change their skins four different times. These changes are called moultings, and the inter-

*I saw at Philadelphia, on the 21st of June, (1831) worms raised by Mr. D'Homergue, in a yard of mulberry trees, which bore heavy rains and thunder storms, as well as cold windy days, a few of which spun in 30 days, and produced excellent cocoons. They began to mount 32 days after hatching. I also saw a few worms raised from eggs, which were laid on the outside of a brick wall in a northern exposure, which had stood all the severity of the winter. I saw many thousands of excellent cocoons raised by Mr. Du Ponceau under the care of Mr. D'Homergue in the heart of the city of Philadelphia. I tried some on trees in the open air the present season, (1832) but they did not succeed; they obtained however to a considerable size, but the frequent rains destroyed them.

†Farmers, however, who would make it profitable, should raise one or two hundred thousand, and rough boards will make the cheapest and most ready shelves for use on an extensive scale.

vening times, the different ages. The time requisite for the several changes, depends greatly on the temperature. If the weather is warm they will generally happen as follows; the first moulting on the fourth or fifth day after the hatching; the second begins on the eighth day; the third on the thirteenth and fourteenth days, and the last change on the twenty-second.

The fifth age lasts about ten days; at the end of which the worms have reached their ultimate growth, being three inches in length, and are prepared to spin their cocoons. Thus thirty-two days intervene between the hatching and the beginning of the cocoon, and I have known the period retarded to sixty days. These changes will only be noticed by accurate observers.

Feeding, Clearing the Litter, &c.—Too many leaves should not be given to them at once, and the leaves given should be spread very thin, because if put on too thick, a great number of the worms, when small, will run the risk of being lost and carried out among the litter. When the worms are in the first age, you need only clean the litter once or twice, as you find it necessary. During the whole of the first age, the leaves of the young plants of the mulberry, as being the tenderest, are preferable to the leaves of older trees, for the food of the young worms. It is well therefore to sow some mulberry seed every year, so as to have a succession of young plants. During the temporary sickness produced by the changing of the skin, they should be fed with a very sparing hand. The sign, by which it is known that worms are sick, and about to change their skins, are these; they hold their heads up, are motionless, and appear to sleep;—this should be noticed.

During the second age, it is advisable still to continue to feed your worms with leaves from the young plants, as they are still preferable for them. You must now begin to be attentive to clear away the litter from time to time, so as to prevent all danger from its heating, which proves highly injurious, though some people never clear away the litter at all. These insects are remarkably fond of cleanliness, which besides, helps to enliven them, and gives them a keen appetite for the leaves that are given them. The litter is taken away in the following manner; you scatter some fresh leaves upon one corner of the shelf, to which the worms having attached themselves, which they will readily do, you then take up the worms by means of the leaves and stalks they cling to, leaving the litter underneath. Having thus taken up all the worms from that corner, and placed them in a clean place, you then clear away the litter from that corner, and carefully sweep together with a little broom or wing, all the dirt, which you remove entirely: you then remove the worms next adjoining to the clean place thus prepared, and put them into it; in this manner you proceed with the rest.*

During the third age, the full grown leaves of the largest trees may be given—though it would be well to reserve the largest and toughest leaves till the last age, when they are the most voracious. During the third age, the litter should be removed at least three or four times; worms that die, or appear to be diseased, should be immediately removed.

* If the worms are laid on a newspaper, it is easy to take out the newspaper, lay it on a table, and transport the worms, who generally adhere to the leaves and branches, to another newspaper, which is put on the shelf after sweeping it. The litter on the other one may then be thrown away.

The same treatment will be required during the fourth and fifth ages, as in the preceding. As they advance in age, the greater will be the proportion of food required, and the oftener the litter must be removed; by these means the process is sooner brought to a conclusion, and the worms always kept in high health and appetite. During the four or five days previous to their rising, the worms consume an incredible quantity of leaves, eating with great voracity, and at this time the labor of tending them is most fatiguing. You will know when the worms are ripe or ready to rise and form their cocoons, by observing them with attention when you give fresh leaves. Those that are ripe, instead of eating, avoid the fresh leaves, and run over them as fast as they can wander about, and try to climb; they will look transparent, of the colour of a green gage plum, and somewhat diminished in size.

In the fifth age, the worms should have new leaves as often as the old ones are consumed, until they are observed to creep on the leaves without eating. At night they should have a double portion.

Preparations for the Cocoons.—Previous to the rising of the worms, some little arches or cabins should have been prepared of brushwood or broom corn, by setting their branches with their top spread, pressing against the bottom of the upper shelf, to hold them in their position. The worms will readily find and climb these little trees, and spin their cocoons in them; the worms will be three or four days spinning their cocoons,* and they will all generally be finished in eight days. The brush may then be taken down, the cocoons taken off, cleared of the loose tow, and prepared for reeling. I have found that the branches of the oak, with the leaves on, answered the purpose for these arches very well, as the leaves are strong and do not crumble in taking off the silk. They should be cut some days before hand, and be dry when used. Some prefer to have the brushwood, entirely stripped of its leaves. Mr. Smith, of Baltimore, uses and recommends the broom corn.

Seed Cocoons.—Those cocoons that are intended for seed, may be stripped of their tow, and strung upon a thread—care being taken not to pierce entirely through the cocoons—and hung up until such time as the moths come out, which will be in one or two weeks, when the males and females will couple; they may be taken by the wings in pairs, without separating them, and placed on large sheets of paper, (old newspapers will do) where they are to remain; as many pairs of moths as can conveniently lie on the papers, may be placed there. The room in which these are placed, should be secure from mice and ants, and the sun should not be permitted to shine on them in any stage of their existence; as soon as the moths on one sheet have done

* Dr. Pascalis, of New-York, a gentleman of great literary reputation, and highly scientific attainments, has, by the use of Electricity, been enabled to hasten the progress of silk insects; and worms reared by him, to which this powerful agent was applied, have spun their cocoons in 27 days from the time they were hatched. I have never made any experiments in this way myself, but doubt not that this, as well as many other improvements, will be introduced. The same gentleman has also recommended in his valuable work, the Silk Culturist, (No. 2, page 105) artificial mounting slides, upon which the worms may mount and spin their cocoons. Those who have curiosity to see these improvements, will find a drawing of them in the work referred to.

laying their eggs, it should be folded up and put down cellar, or in some cool, dry place, until wanted for use the next spring.

The moths are in the form of a grayish white butterfly, and generally begin to lay their eggs in 24 to 36 hours, after leaving the cocoon. Each female moth will lay from three to four hundred eggs, generally handsomely disposed and firmly attached to the paper in a circular form.

Should the eggs be permitted to remain exposed to the warm weather, they will sometimes hatch the same season, and unless another crop be desired, they will be lost. The moths eat nothing after leaving the cocoons, and die in a few days after depositing the eggs.

Diseases of Silk Worms.—The foreign writers enumerate and describe a variety of diseases, to which silk worms are liable in their different ages, and particularly in the fifth, which all agree to be the most critical. But to all these diseases, they prescribe the same means of prevention and the same remedies, when they have occurred. It is therefore unnecessary to describe their various systems, as it would lead to no good practical result.

The diseases of silk worms generally arise from the want of sufficient air and space, from their not being kept dry, and being fed with damp leaves, and also from their not being kept sufficiently clean, particularly in the fifth age. The fermentation of their litter, the dampness and the bad air which it occasions, are the most frequent causes of mortality among them. The greatest care therefore should be taken, to keep them constantly clean and dry, and to give them a sufficient quantity of space and air; a current of air in fine warm days, should always be let into their nursery. If, notwithstanding all the care taken, some general sickness should declare itself among them, the remedy recommended by the writers, is, to give them a change of air, by transporting them into another room. But this may not always be convenient. It is with these animals, as with our species, easier to prevent diseases than to cure them. If nothing better can be done, the diseased worms must be thrown away. The chloride of lime and soda have been used with good effect in some nurseries to cleanse the air.

Before the worms begin to mount and spin their cocoons, they void themselves of their excrements, and they generally do it on or near the edge of the board on which they are placed. Those who have not strength enough to cast off their excrements, die in the attempt, and in the morning numbers of them are found dead. They should be carefully taken up and thrown away. When many are found in that condition, it is a sign that the litter is fermenting, and that a cleaning is necessary.

It is possible that there may be diseases of the silk worms peculiar to the climate. Experience will enlighten us on the subject. I have heard that ladies in one of our Southern States have lost all their worms this year, from the *plague getting in among them.* It is certain that there are epidemic disorders by which whole nurseries of silk worms are sometimes destroyed. But these are of rare occurrence in our country; and it is hoped that they may be prevented by careful attention to the rules prescribed.

Curing the Cocoons.—Were it possible to wind off the cocoons before the insect naturally pierces them, it would be best to do it, because the silk at that time winds off with greater ease than afterwards. But as this is sometimes impossible, and often inconvenient, various me-

thods have been devised to stifle the chrysales in the cocoons. This may be done by placing them in an oven, moderately heated, or in the steam of boiling water; even the sun is sufficient for this purpose in southern latitudes, by acting upon them several days. I have used the first method with success. The oven being moderately heated, the cocoons were spread out, in oblong baskets eight inches deep, in box covers, pans, &c. and permitted to remain in the oven half an hour. In being cured, they lose about twenty-five per cent. in weight. Mr. Smith, of Baltimore, says, he has found the following method preferable to any other, and that the object is perfected without danger of injuring the silk. I put the cocoons, says he, into a tight tin vessel, with a cover, closely fitted, and put this vessel into another a little larger, containing such quantity of water as will nearly fill it, when the other is put into it.

Fire is then applied, and the water kept boiling, half an hour or more, according to the size of the vessel, and until the cocoons in the inner vessel shall have become as hot as the boiling water. The cocoons are then spread out in a dry room, that the moisture may evaporate. After this operation, the cocoons are ready for the reel or for sale.*

Space required for Silk Worms.—It is calculated that the worms proceeding from one ounce of eggs, which in numbers are estimated at 35 to 40,000, should have a space on the shelves,

	squ. ft.	in.		squ. ft.	in.
In the 1st age of	7	4	In the 4th age of	82	6
In the 2d age of	14	8	In the 5th age of	183	4
In the 3d age of	34	10			

As a general rule they ought not touch one another.

Quantities of Silk yielded by various parcels of Cocoons.—Eight pounds of Cocoons, (16 ozs. to the pound) produced from 16 to 18 ounces of silk, 6 to 9 cocoons to the thread. Mrs. Williams obtained nearly one ounce and a half, from 244 cocoons. Miss Rhodes had on an average one ounce from 244 cocoons. The estimates of the number of worms to make a pound of spun silk, are various. Mr. Storrs, of Conn. says 4000; Mr. Tufts, of Dudley, 3000; Mr. D'Homergue says 2400, of 350 to a pound, the moth not stifled.

I should say the last estimate was the most correct, and even a less number will produce a pound if they are well taken care of. I have had three pounds from 8000 in one season, including floss.

Weight of Cocoons.—Two hundred cocoons, from worms raised in the early settlement of Georgia, weighed a pound. In Pennsylvania, 306 cocoons, from worms fed by the late Mr. Busti, and from 490 to 600 in the establishment of Mr. Terhoven, weighed a pound.†

* This might do, perhaps, for a small quantity of cocoons, but I think, for a large one, it would cost too much, and give too much trouble.

† Mr. Pintard, of Philadelphia, has raised Silk Worms from eggs produced on Messrs. Terhoven's farm, 335 of the cocoons of those worms, chrysales not killed, weighed one pound. Mr. D'Homergue aided him in counting and weighing them.

Of the cocoons raised in Philadelphia by Mr. D'Homergue the present year, which I saw, the eggs were partly from South-Carolina, and partly from France; the former were large, and were found when weighed, to contain 337 to a pound.

It is very evident that there is a great difference in the weight as well as the quality of cocoons; and the quantity required to make a pound of reeled silk. This may depend upon the different variety of the worms, or the greater or less care in nursing them.

The following calculation of the labor attending and connected with the culture of silk, is by John Fitch, Esq. of Mansfield, Conn. and is taken from the manual published by order of Congress. One acre of full grown mulberry trees, set one and a half rods apart, will produce 40 pounds of silk.

The labor may be estimated as follows:

For the three first weeks after the worms are hatched, one woman who is acquainted with the business, or children who would be equal to such a person.

For the next twelve or fourteen days, five hands, or what would be equal to five if performed by children. In this period, two men with other help would be employed to better advantage than all women and children. This period finishes with the worms. For picking of the balls and reeling the silk, it will require about the same amount of labor for the same length of time, as the last mentioned period, which may all be performed by women and children. The aforesaid labor and board may be estimated at eighty dollars; spinning the silk at thirty-four dollars; forty pounds of silk, at the lowest cash price, is worth two hundred dollars, which makes the following results.

40 pounds silk at $5 per pound, - - -		$200 00
Labor and board, - - - - - -	80 00	
Spinning, - - - - - - -	34 00	
		114 00
Net profit per acre, - - - - -		$86 00

The principal part of the labor may be performed by women and children. But when the business is carried on to a considerable extent, it is considered more profitable to employ some men for the last period of the worms.

Cost of raising Silk, by Mr. D'Homergue.—Four ounces of eggs, each ounce containing about 35,000 eggs, making, in all, 140,000 eggs.

If the mulberry trees are on the farm where the eggs are raised, two women are sufficient to gather the leaves, until the fourth moulting. The worms should be fed three times a day, and cleaned once after each moulting.

In the last ten days, additional help is necessary, as the worms require more frequent cleaning, in consequence of the greater quantity of leaves which they consume; and to prevent fermentation, and consequent sickness, more attention is required at this time.

Mr. Du Ponceau has raised seven ounces of eggs with only the labor of two persons, and these not employed the whole of each day, except on the last ten days, and some occasional help, who were employed to bring leaves from the country, two miles distant. In the three first weeks, one person could have done the whole business,

The French Cocoons were small, and 387 weighed one pound. The chrysales not stifled, and the cocoons just gathered.

Of cocoons raised in Massachusetts, by Mrs. Davenport, of Milton, from eggs furnished by me, and tended agreeably to my instruction, 206 weighed one pound before the chrysales were killed, and 407 weighed two pounds.

except gathering and bringing the leaves. This was done in the city of Philadelphia.

The following is the calculation of Mr. D'Homergue.

An acre* contains 45,537 square feet. 1500 mulberry trees, six years old, will produce each 30 lbs. of leaves, which makes 45,000 lbs. An acre will contain 1500 mulberry trees, planted at the distance of twelve square feet from each other. This is in case it is wished to grow corn or wheat in the intervals between the trees. But if the ground is to be devoted to mulberry trees alone, 3000 trees may be planted on an acre at six square feet distance, and these at six years old will produce 90,000 lbs. of leaves. Selling the leaves at half a cent per pound, the purchaser gathering them, or at one cent per pound delivered to the purchaser, would produce in the first case $900, in the latter $450.

According to the calculation of Dandolo, which appears exaggerated, 90,000 pounds of leaves, at twenty-one pounds of leaves for one pound of cocoons, would produce at least 3700 lbs. of cocoons, which, at twenty-five cents per pound, (the moth not being stifled) would produce $925. After killing the chrysalies, the cocoons will produce a higher price, say thirty, forty, or perhaps fifty cents per pound, according to the quality and the abundance, or scarcity of the articles, and the profit will be proportionate.

The said 3700 pounds of cocoons, being good and well reeled, will produce, at eight pounds of cocoons for one pound of silk, 420 pounds of the raw article, which, at $3 per pound, the price China silk sells for in our seaports, will amount to $1260; and if perfectly well reeled and suited to the European market, may produce $2520, at the rate of $6 per pound.

On Tillage.

[FROM GOODSELL'S GENESEE FARMER.]

[Read before the Wheatland Agricultural Society, by J. M'Vean, as reported by a Committee;—the facts and hints are so instructive, at the same time so generally interesting, that the whole report is copied, as a means of information to our inexperienced readers, of the advantages to be derived from the Science of Agriculture. Perhaps in some sections of this and the adjoining States it will be serviceable.—*Ed. So. Agr.*]

THE object of tillage, is to pulverize the soil, decompose and reduce its vegetable matter, increase its fertility, by the successive exposure of its parts to the influence of the atmosphere; reference being had to its progressive improvement and continued capacity, to produce the greatest crops of cultivated plants. To the successful pursuit of agriculture, it is indispensable, that the operation be well performed; pulverizing and reversing the soil effectually, to an uniform and sufficient depth; that the vegetable decomposition may pervade and expand the whole mass; stimulating it to the germination and vigorous growth of the crop; the produce being generally more in proportion to the weight of soil which is tilled, than to the surface which is run over. * *

As respects the most proper time of applying tillage, for various crops, I believe it is generally conceded, that the fall is the best time to plough for certain spring crops, as oats and barley, especially on heavy lands, as they are seldom dry enough in season for spring culti-

*It is evident that Mr. D Homergue does not mean the English acre.

vation; and moreover the winter frosts have a fine effect in pulverizing such soils, and likewise in restoring them when ploughed wet in the fall.

Corn has been very successfully cultivated with one efficient ploughing applied immediately before planting; I believe this to be a very good practice, and much preferable to fall ploughing.

Fall ploughing for wheat is improper, under common circumstances; and land should, perhaps, never be ploughed when very wet; although a certain degree of moisture is beneficial, in decomposing the sod of old meadows and pastures; and such lands if not better applied to corn, will bear and even require earlier cultivation as fallows, than stubble or recent clover ley.

There is some reason to believe, that lands of a light hot gravelly mould, may, under some circumstances, be improved, by applying the last ploughing for wheat, when the land is wet, as it gives them additional weight and firmness, so much required by that crop. There is but little such land, however, in this section, and as a general rule, the drier the land when ploughed the better.

The proper depth of tillage must be governed by the nature and state of soils, and the crops to be produced. As my agricultural experience has been confined to the soil of this section, I propose before remarking more particularly on this subject, to offer my opinion with regard to the nature of our soil. Premising that when not otherwise specified, reference is had to the cultivation of wheat, this being the leading crop of our country.

I am not aware that the soil in this section which has been denominated Oak openings, is at this time essentially different from that of the wood or rolling up lands of the surrounding country, where both have been subjected to the same course of cultivation. Originally, however, this was not the case. An accumulated mass of vegetable matter covered the wood lands, which when mixed with the soil, gave fair crops with imperfect cultivation, which might be performed among the stumps and roots with a single pair of oxen, and this without reference to the soil beneath.

With the Oak openings it was different. The annual burning of the tall grass which grew upon them by the aborigenes prevented the growth of timber, and also that collection of vegetable matter, which was found upon the wood lands, the whole surface presenting the forbidding appearance of naked barren plains. The soil was penetrated with the fibrous roots of grasses and ferns which sprang up annually, as well as those of willows, small oak and hickory bushes, demanding when first ploughed the united strength of eight or ten oxen to urge the ponderous breaking-up plough through the stubborn soil, which might with propriety, be called all sub-soil with the exception of an inch or so at the surface, which consisted of matted crowns of grass, exhibiting the same uniform, unfertile, lifeless, appearance and producing crops of wheat which would not exceed fifteen bushels per acre.

These were the discouraging prospects of the cultivator at the commencement of the oak openings, but by perseverence which overcomes so many obstacles, their labours were crowned with success. The soil has continued to improve in fertility beyond the expectations of the most sanguine operator, yielding at this time, thirty, forty, and in many instances, fifty bushels of wheat per acre, of a quality that has done much towards establishing in the New-York markets, the superior character of Genesee flour. This fertility of soil has been produced

by the common course of cropping, and that without the stimulus or application of barn-yard manures, demonstrating that the soil possesses within itself, materials which will continue its productiveness under a proper course of tillage.

It may be inquired what has been the cause of this increased fertility of the soil.

The secondary causes have been, a constant attention to pulverizing the soil, and exposing it to the influence of the atmosphere, by a continued course of cultivation, and the annual additions of vegetable matter which has accumulated under a judicious course of cropping, by pasturage, and stubble, but more especially by cultivation of clover and the use of plaster.

The primary cause and that on which rests its permanent fertility, and enduring capacity, is the nature and quality of the sub-soil, which while it allows a filtration of the superabundant moisture, is at the same time of sufficient tenacity to retain the fertilizing properties of manures, and by exposure to the atmosphere may be converted into an excellent soil, to any depth that may be required. This convertability of the sub-soil, into one of extreme fertility, and which characterizes the best wheat soils of this section, has often been remarked upon, and confirmed by the immediate productiveness of the sub-soil, which has been thrown from the bottoms of cellars and wells. What, the cause of this immediate productiveness of the sub-soil, is, can only be determined by chemical analysis. We can only draw our conclusions, as to the constituent principles by observing the relation that exists between causes and effects, and we fear that they are too often neglected by many, who unprofitably exhaust the shallow mould of the surface, by repeated workings, forgetful of the means of wealth, which lies beneath, yet perfectly at their disposal.

With the means of forming a soil of any required depth, at our disposal, the question presents itself—"how deep shall we plough?" In reply to this I would say "plough deep." A few good crops may be raised with shallow surface ploughing, on a rich soil, but when it becomes exhausted, in dry weather it will be found full of hard lumps, and dust, and in wet, a clamy compound, injured if ploughed in that situation, or baked to hardness by drought, and accordingly the crops will be light and thin, suffering for want of nourishment as it approaches maturity, will be inferior both in quality and quantity.

On the other hand, when soils are ploughed sufficiently deep, the results are the reverse, in every particular. In wet weather it equalizes the moisture, and what is of more consequence, with our soils and climate, in dry weather, it resists the effect of heat, from its increased depth, retaining a sufficient quantity of moisture for the support of plants, or for the decomposition of vegetable matter; crops grow up thick and strong, surmounting better every vicissitude or change of climate, while growing, leaving the soil enriched with a heavy stubble after they are removed. Without seeding, such soils in this section, are soon covered with a thick crop of white clover, which much improves them for succeeding crops. The roots of our cultivated crops, rarely penetrate the sub-soil, therefore, the advantage of deep ploughing must appear evident to every close observer.

In the spring of 1825, in searching for sand, I examined one of my fields in several places without success. The soil was that of our common oak openings, and very much exhausted as it had only received shallow ploughings. The best crop had been corn. As the

sub-soil appeared inviting, I had the field ploughed in June, with a strong team as deep as one of Wood's ploughs would work, adding at once, at least one-third, to the weight of worked soil. It was cross ploughed and sowed at the usual time, and the crop was uncommonly good both as to quality and quantity. I have continued the same course of tillage upon that, and other lands of the same description, as far as practicable and with similar success. It is true that some of the crops have been injured by the Hessian fly, others from the density of their foliage and the excessive heat of the season have lodged, but have not failed for want of nourishment. With these exceptions the results of the above course of tillage have been an improvement in the appearance and quality of the land, and a very great reduction in the cost of cultivation. Such also has been the results on neighbouring farms so far as I have been acquainted, where the same course of tillage has been adopted. Whether these beneficial effects will continue, and to what extent, time and further experience must determine. I have no doubts, however, as to the success, and am confident that the most favourable results will follow this course of cultivation on most of our uplands of the country. I would observe that ploughing to this depth is not necessary at each time, as the intervening ploughings, to the wants, and habits of the crops to be cultivated.

Having bestowed the most careful and serious consideration, upon the subject of deep ploughing as a general rule, whether with regard to the improvement of the soil, or the wealth, or prosperity of the operator, I am convinced that the admonition of Poor Richard will apply to every farmer in this community.

> "Plough deep while sluggards sleep
> "And you shall have corn to sell and to keep."

I am aware that there are all small portions of uplands, which have loose sandy or gravel sub-soils to which deep ploughings might prove injurious; and also larger portions of low, or cold, moist lands, where the sub-soil is a tenacious clay which would not be benefited by bringing up too much of it at any one time. These must be mixed by degrees, otherwise, when the surface mould becomes exhausted, it will be difficult to sustain them in a productive state without the application of manures.

With regard to the frequency of ploughing, some difference of opinion has existed. It has been the common practice to commence summer fallows according to their extent, and the means which the farmer has at his command. Sometimes this operation has been commenced as early as April, but more commonly in May or June, and between that time and sowing the seed, the land is more commonly ploughed and harrowed two or three times. The extent to which this practice has obtained in this section, may be considered as proof of its utility, and doubtless in many instances it is quite necessary, not only for the purpose of rendering the sub-soil light and friable, but for destroying the noxious weeds which may have increased upon the surface. Frequent and deep ploughings were absolutely necessary in the early cultivation of our soil, which as has been observed, in its original state presented a sterile, lifeless appearance proceeding from the absence of vegetable matter, and perhaps, the presence of some acid in the soil which was unfriendly to vegetation.

This original state of the soil, has been so changed by cultivation, that it cannot now be said to be the same that it was, when first it was operated upon, and it now becomes an inquiry of importance, whether

a different mode of culture should not be adopted in consequence of this change?

There are many circumstances which would induce a belief, that most of the soil with us has now arrived at that point of fertility, when frequent ploughings may no only cease to improve, but actually impoverish the soil. If it is admitted that soils can be injured by too frequent ploughings, then the inquiry will be, as to the amount of tillage, which will be found the most profitable, both for the present crop and those which are to succeed upon the same lands.

That soils may be injured by too frequent tillage under certain circumstances, was demonstrated to me by the following experiments.

A field on which the preceeding crop had been corn, of a heavy soil, was prepared for wheat by five ploughings, and eight harrowings, commencing in May, and given at intervals between that and the common time of sowing. This was in 1828, which season was rather wet, and the crop of wheat which followed was comparatively light, and the soil was so injured as not yet to have recovered its former fertility.

In 1832, an acre of wheat stubble, which was infested with the plant, commonly called wild rye, was prepared for wheat, by five ploughings, commencing in June, and harrowed not less than 12 times. This extra tillage did not prove beneficial to the crop, in short it was inferior to that upon a part of the same field, which was rather grassy, and was only ploughed and harrowed three times. The effect upon the soil remains yet to be ascertained, but as the soil was of a fine friable loam, and the weather generally dry, I do not anticipate the result so unfavourable as in the first experiment.

There is no doubt, but that if a piece of land was kept as a fallow for two or three years, with frequent ploughings, so as to exclude the growth of plants, it would have a ruinous effect upon the soil, by dissipating all vegetable matter, and leaving it in a state from which it requires years to recover it.

Do we not approach this, whenever we apply unnecessary tillage, or give our lands a greater number of ploughings than are necessary to subdue the grasses, and pulverize it for the reception of the seed?

During the time that vegetable matter is undergoing decomposition, it has the effect to loosen, or expand the soil, fitting it for the extension of the young roots, of cultivated crops, and also for the free circulation of the food of plants, produced by the decomposition; but these effects are lost, where a long course of fallowing is pursued, as the time of greatest decomposition is past, before the seed is committed to the ground.

The object of tillage, then appears to be to prepare the soil in the shortest space of time required, to bring the vegetable matter deposited in the soil, into that state when it shall act as food for the plants to be introduced, with the greatest effect. This I imagine, in most cases may be effected, in less time than is generally devoted to summer fallowing, and so far as my observations have been directed to this subject, the most favourable results have followed short fallowing, both with regard to the crop, and the after condition of the soil. When applied within the above limitation, frequent tillage may not be so exceptionable, yet even then by repeated exposure to the atmosphere, much of the vegetable matter may be dissipated, which otherwise would be retained in the soil, as food for the plants to be cultivated.

Perhaps when our soils have been mixed to a sufficient depth, so as

to render cultivation easy, the best system of tillage will be found, that which experiment has recommended, and which many of you now pursue, viz: to give but one deep ploughing for each crop, by which the vegetable matter from the surface will be placed in the best possible condition, to act as a stimulant upon the crop, and the undecomposed parts retained to prevent future tenacity of the soil.

Should not this system of tillage, so plausible in theory, be attended with any unforeseen injurious effects, I can see no reason why, by the use of plaister and clover, our soils may not only be made to produce wheat, in the greatest perfection our climate will admit of, but be increased in fertility to that extent, as to require to be reduced, by those crops which draw a larger quantity of food from the soil.

JOHN M'VEAN.

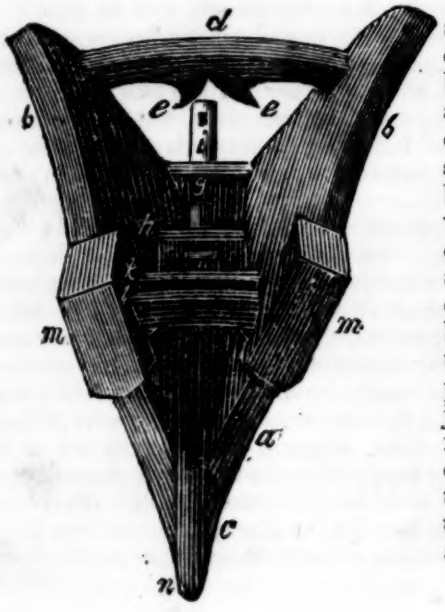
M'Cormick's Self-Sharpening Horizontal Plough.

[FROM THE MECHANIC'S MAGAZINE.]

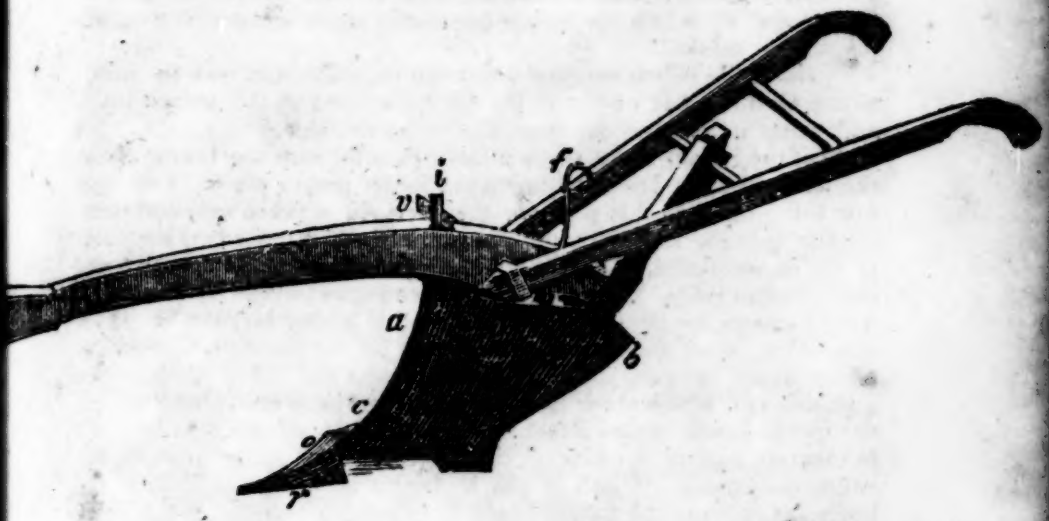
[Mr. M'Cormick's plough has been favourably noticed in the Southern papers, and at agricultural exhibitions. In the Southern States increasing attention is given to horizontal ploughing, which prevents the soil from being washed from declivities. Fitzherbert, who wrote the middle of the sixteenth century, speaks of ploughs with a mould-board to shift from one side to the other, for side-hill ploughing. Of the practical use of this plough by farmers, and of its cost, we should like to hear from the inventor.—*Ed. N. Y. F.*]

Be it known, that I, Cyrus H. M'Cormick, of Rockbridge County, and State of Virginia, have made an improvement in the useful arts, being a "self-sharpening horizontal plough," which is described as follows:

This plough, like most others, consists of a beam, handles, helve, mould-board, and share. In addition to these there is a latch-rod to make fast the mould-board and share, when changed to either side, and a main bolt to support the mould-board.



The beam, handles, and helve, are similar to those employed in other ploughs. The mould-board, represented at *a* in the annexed drawings, is made double, of cast iron, curved somewhat like other mould-boards, on both sides. The wings, *b b*, are united in part at *c*, and extend outward, making a suitable angle for turning over the earth. There is a brace, *d*, extending between the two wings, behind, supporting them firmly with projections, *e e*, on one side, for receiving the latch-rod, *f*, when changing the plough. Between the wings on the top, and near the front, is a brace, *g*, and another, *h*, near the middle.



through which there are openings for the main bolts, *i*, to pass. Near the bottom of the mould-board are two other braces, *k*, *l*, at about one inch apart, for receiving the hinder end of the share, and between which it plays and turns. Near the ends of these braces, and upon the lower side of the mould-board, are two projections, *m m*, upon which the mould-board slides alternately. The projections can either be cast solid, with the mould-board, or be made of steel or cast iron, and to be rivetted on. These projections serve also to hold and support the share when turned. At the front end of the mould-board is cast on it a projection, *n*, which serves as a pivot, on which the share turns.

The share, *o*, is made of cast or wrought iron, in a triangular shape. It consists of the neck, *p*, (with or without a head,) and a slat, *g*, for a key, placed behind the braces; also, a point, *r*, either cast on the share or made separately, and fastened on it by being rivetted, or otherwise.

There is also a shoulder, or projection, *s*, by means of which and the latch-rod the share is kept in its place when changed. In the hinder end of the point is a cavity, *t*, to admit the point on the mould-board, upon which and the neck the share turns.

The *main bolt*, *i*, is made of wrought iron, and passes through the beam, and the two openings in the braces of the mould-board before mentioned having a head, *u*, on the lower end, and either a screw or key, *v*, on the head above the beam.

The *latch-rod*, *f*, is a plain curved rod of wrought iron, which extends from above the beam to the neck of the share, and is moveable from one side of the beam and mould-board to the other, passing between the beam and the projections on the brace of the mould-board,

and entering between the neck of the share and the wing of the mould-board, and by which the mould-board and share are screwed in the position required.

Operation.—When required to plough on a hill-side, say the declination of the hill is on the right, the right wing of the mould-board and share must stand out from the beam to the right, and the other wing of the mould-board being nearly parallel with the beam, forms the land-side, the latch-rod being put in its proper place. One furrow being made in this position, the latch-rod is taken out, and turning the plough, resting on the share, the share is turned on the point of the mould-board, to the other side, or left, and the mould-board also changes sides. The left wing projecting out to the left, the right wing forming the land side, the latch-rod is passed between the other side of the beam and the other projection on the brace, the points entering again between the neck of the share and other wing of the mould-board, which pressing the shoulder on the share, above that on the mould-board, makes it fast. The neck of the share might be made to turn on a pivot or collar on the centre, instead of the opening between the braces. A nail or pin is driven in the helve, below the brace, to prevent the mould-board from sinking behind, or the beam from rising, to steady the plough.

The invention here claimed, and desired to be secured by letters patent, consists in the peculiar arrangement and construction of the several parts of the plough, as before described, and particularly the mode of forming the point at the end of the mould-board on which the share turns; and the two braces with the space between them, in which the neck of the share works; the brace near the centre of the mould-board; the two projections on which the mould-board slides; and the share, with the mode of turning and fastening it by the latch-rod.

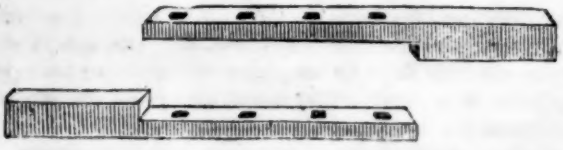
Done at the city of Washington, this 29th day of October, 1833.

CYRUS H. M'CORMICK.

Expeditious Mode of making Posts for Fences.

[By [?] To the Editor of the New-York Farmer and American Gardener's Magazine.]

Sir,—If an economical and expeditious mode of making posts for fences would be a desideratum to any of your readers, the annexed sketch and explanation are at your service:



It explains itself. After you have hewn your post *entire*, which must obviously be from eighteen inches to two feet longer than is required for a single one, saw it half through, at equal distances from each end, but on opposite sides; then split it down the middle, and you have two good posts with a little more than the trouble of one. For post and rail fences, mortice it first, and proceed in the same way.

[?]

On the Cultivation of Bees.

[FROM THE GENESEE FARMER.]

Mr. Tucker,—I am induced by the communication of "J. S." in the last number of the *Genesee Farmer*, on the cultivation of bees, to relate my brief experience in that line of business. Like "J. S." I had been entirely unacquainted with the subject till I read the communications of "Ulmus." Adopting his plan, a year ago I partitioned off a small room in the south end of my wood-house chamber, in which I placed a long hive or box, constructed after the pattern, and of the dimensions recommended by "Ulmus."* The hive was placed about a foot from the side of the room, and raised two feet from the floor, by placing a bench under each end, so as to permit the opening the lid or door on the under side. A tight shutter was made for a window in the end of the room, opening on the inside so as to admit light when desirable. Holes were cut through the side of the house, corresponding with those in the hive, and a shingle placed for the bees to pass from the hive to the hole through the side of the house. In the month of April I procured a swarm of bees in a common hive, and set it on a long hive over the middle partition; opening the communication to one division of the hive, and leaving that to the other closed. I soon discovered that many of the bees, being probably attracted by the light admitted through the roof, instead of passing out at the place designed, were lost in the room and perished. To remedy this mischief, and prevent their escaping by any other doors than those constructed for that purpose, I placed another shingle over the one already mentioned, raising it an inch, by two strips of shingle of that width, and nailing them together like a box; thus making a tight passage through which they must necessarily pass from the hive to the open air. In this upper shingle I cut a hole six inches square, and put a window glass over it, that I might observe the labourers as they passed in and out. When the weather was favourable, this passage was always thronged by the industrious creatures; some coming in, and others going out, with the greatest apparent haste, each seeming to be intent on his own business. Sometimes one would be seen dragging out a a dead bee, and later in the season you could see them tugging at the drones. The work went briskly on, till one day in June I observed that business operations had pretty much ceased. Instead of hurrying through the gangway as before, each individual stood with his bill down and tail up, and wings in rapid motion. This singular conduct continued a few days, and I mistrusted that some calamity had befallen the community, and that my experiment in raising bees would fail. At length the passage from the hive became completely choked up with bees, and they began to lay out on the side of the house, as I have observed on hives before swarming. After two or three days, the mass suddenly disappeared from the outside of the house, the passage to the hive was cleared, and work went on as formerly. I then concluded that these were merely indications of a young swarm coming out, and that when they got ready to go to work, they joined the old swarm, and worked together. They may have swarmed and went off, though I think not. From what I have read on the subject, I had not anticipated any signs of swarming, so long there was room in the hive. These indications were observed only on the occasion mentioned, though ordinarily, I suppose, more than one young swarm would have been produced. Perhaps I have not rightly understood the pheno-

* See So. Ag. vol. vii. p. 546.

menon. I had no opportunity of observing the operations of the bees within the hive, or means of ascertaining what progress they made in storing honey; for whenever I attempted to raise the old hive, or open the large one for the purpose of looking in, the occupants threatened war, and presented themselves in such numbers that I was obliged to desist. The bee moth appeared about the hive, but whether they were brought there with the old hive, I cannot say. I think, however, they were unable to make a lodgement inside.

After the bees had done flying in the fall, I raised the old hive, which was a large one, and found it *full* of honey, and that the bees had all gone below. I according "assumed the responsibility" of removing the treasure, and appropriating it to my own use. On opening the long hive, I found the middle apartment on which the old hive had been placed, also completely filled. The comb was built diagonally across the hive, and appeared to have been done in a very neat and workmanlike manner. The adjoining apartment, which communicated with this, was *half filled* or more, the comb being built in the same direction with the other, and finished down to the floor of the hive. So that, at least, half of the long hive was filled in the course of the season, by a single swarm and their increase, besides the aforesaid *deposites* which I removed, and have no intention of *restoring*. Whether the new comb was all filled with honey, or whether they build faster than they gather the honey, I am not informed. A new hive had been placed over the apartment which was partly filled as above described, and nothing done to it; from which it appears that the bees do not invariably commence working in the upper hive, as I had been induced to suppose from something I had seen in the Farmer or elsewhere.

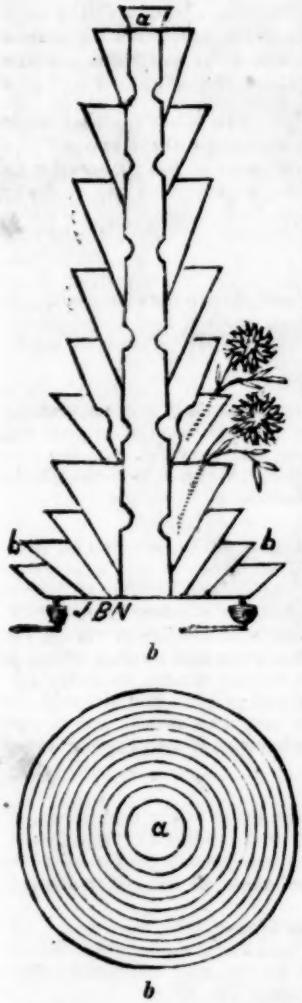
My experiment, with the success of which I am thus far satisfied, and for which I acknowledge my indebtedness to the communications of "Ulmus," published in former numbers of the Farmer, has suggested no material improvements upon this plan. I would, however, make the hive as much longer than his pattern as the size of the room in which it is to be placed would permit; as I perceive, that if my swarm continue to increase, they will soon fill the hive, and it will be more inconvenient enlarging it now, than to have made it two or three times as large in the first instance. M. M.

Mr. Butler, in his Treatise on Bees, says—"It is a notorious fact that England pays annually to the north of Germany £40 or 50,000 sterling for the produce of the bee, which could be saved by a small expense by her own peasantry. Even in America, we are so regardless of the bee, as to import honey in hogsheads from the island of Cuba and elsewhere. No country possesses greater advantages for the culture of the bee, and perhaps no country has so grossly neglected it."

Among the people of many of countries, as the Chinese, Egyptians, French, Italians and Germans, the cultivation of bees is deemed an object of sufficient importance for those living in the vicinity of navigable rivers or canals to transport them from place to place, often hundreds of miles distant, for the purpose of procuring fresh pasturage for them—while we in America, who happened to have a swarm of bees, generally turn them off, to provide for themselves, paying little or no attention to them; and if by chance they increase to 2 or 3 swarms, we are sure to 'take up,' that is, kill off, one or more swarms to get their honey. Thus we not only fail to promote, but actually retard the increase of bees in this country, by our slovenly and inhuman treatment of them.—*Gen. Far.*

PART III.

MISCELLANEOUS INTELLIGENCE.



Design of a Flower Stand.—We have copied from the London Horticultural Register, the annexed description of a design of a Flower Stand, for placing cut flowers in, which has an excellent effect, having the appearance of a complete pyramid of flowers. It is well calculated for shewing Dahlias, &c. each height of vessels is filled with water, and the flowers placed in as shewn in the outline beginning at *(a)*, and filling every vessel down to *(b)*. The whole is made of tin, and can be manufactured any size, and for a a trifling expense.

☞ The object will be easily explained by the outline view, and will enable any tinman to execute the work with ease —*Ed. So. Agr.*

Restoration of the old name Dahlia.—At the exhibition of the Berverley Floral and Horticultural Society, H. Reynard, Esq., the President, made some observations on the Georgina, which, he said, ought to be still called Dahlia. "The genus was named Dahl*ia* in honor of Professor Dahl, a Swedish botanist. Some objections were at first made to this name, under an erroneous impression that it had already been appropriated to another genus; and a further objection was taken to it from the similarity of its sound to Dale*a*, a genus of leguminous plants, so named after our countryman, Dr. Dale. The first of these objections induced Professor Willdenow, in his *Species Plantarum*, to apply to those plants a new name; that of Georgin*a*, after Georgi, an eminent Russian traveller and botanist. In this he was followed by M. Decandolle: but the original name seems to be fully established; and is retained in the new edition of the *Hortus Kewensis*, as well as by the botanists [gardeners] of France." It is certainly much to be regretted that a plant in such general cultivation as that alluded to should pass under two different names; but there is no other mode of avoiding cases of this kind than by adhering to the principles and rules laid down by botanists. The objections made to the name of Dahl*ia* were made under a supposed discovery of the fact, that the name Georgi*na* had been previously applied to the same family of plants: see VII. 716.; and because the laws of botanical nomenclature enjoin the employment of any name first applied, to the exclusion of all others, except where new genera are formed out of old ones. Our authority for adopting the name Georgi*na* was Mr. Sweet; but, since the above was in type, Mr. David Don has proved to us that the name Dahl*ia* was applied one year before that of Georgi*na*, and that, therefore, although the latter name has been adopted in the *Dictionaire d'Histoire Naturelle*, the former ought to be retained. The name Dahl*ia*, therefore, shall in future be used by us, instead of that of Georgi*na;* and we thank Mr. Reynard for leading us to re-examine the subject. —*London Gar. Mag.*

To save Fruit Trees injured by Mice.—A correspondent of the Genesee Farmer had a choice apple tree peeled by mice, six inches above ground. By heaping earth above the peeled part, he eventually succeeded in saving the tree.—*N. Y. Far.*

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Swelling.—To scatter swellings on Horses or other cattle, take two quarts of proof whiskey or other proof spirits, warm it over coals, but not to blaze—dissolve in it a pint of soft soap—when cool, put in a bottle and add one ounce of camphor. When dissolved, it will form the liquid of Opodeldoc, and is then ready for application, forming a cheap and useful remedy. When the swelling is on the leg, or any part that will receive a bandage, such bandage should be applied, and wet with the Opodeldoc.

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Scalding Hogs.—A gentleman of experience and observation desires us to make known, for the benefit of farmers, a mode practised by him of scalding hogs.

Instead of putting cold water, or ashes, in the hot water, as is generally practised, he washes the hog in cold water previous to scalding it. It matters not how hot the water may be with which the hog is scalded; let cold water be first used in the way prescribed, the hair can be taken off with ease and neatness. No danger need be apprehended of the hair becoming set, as is often the case when this mode is not resorted to, owing to a particular temperature of the water.

The gentleman who communicated to us this mode, says he has practised it for more than twenty years, and has not, during that time, experienced any difficulty in scalding hogs. In dressing a young pig for roasting, he first dips it in cold water, and then in hot, by which process he is enabled to remove the hair with the least possible trouble.—*Wyoming Her.*

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Rice to Fatten Fowls.—Rice and skimmed milk, heated until the rice swells, are said to fatten fowls very fast. It should be free from acidity, and consequently prepared every day. This food is said to be cheap, and to give a superior whiteness to the flesh.—*N. Y. F.*

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Chronic Rheumatism.—The Boston Medical Journal strongly recommends for the cure of this complaint, a mixture of equal parts of the balsam of sulphur and spirit of turpentine. Six drops are given, morning and evening, and the dose increased two drops a day until it produces stranguary, when it is diminished a little, and continued until the disease is removed.—*Ibid.*

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Salting Butter.—The quantity of salt for butter that is not to be eaten for several months after salting, should not be less than half an ounce of salt, mixed with two drachms of sugar and two drachms of nitre, to sixteen ounces of butter. The sugar improves the taste, and the nitre gives the butter a better colour, while both of them act with the salt in preserving the butter from rancidity. If the salt is not minutely mixed into the butter, that on which it rests will have a yellow or brownish colour, while the rest will be of a white colour, which, in dairy language, is termed "pyety butter," that brings an inferior price. But although the butter has to be kneaded among the water, and the salt well mixed into it, care must be taken not to bake or knead it too much, otherwise it will become tough or gluey.—*Quar. Jour.*

—

Preparing Molasses for Fruit.—As economy is the order of the day, permit me through the medium of your paper to communicate to our ladies a receipt for preparing molasses for preserving fruit, &c. which renders it much better suited for that purpose than a syrup prepared from the best loaf sugar, as it is not so liable to candy, nor (if well prepared) to ferment.

Take 8lbs. molasses, bright New-Orleans or Sugar House, 8lbs. pure water, 1lb. coarsely powdered charcoal. Boil for 20 minutes, then strain through fine flannel double—put it again in the kettle with the white of an egg, and boil gently, till it forms a syrup of proper consistence, and strain again.—*Vir. Her.*

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To make Loaf Rice Bread.—Boil a pint of rice soft, add a pint of leaven, then three quarts of the flour, put it to rise in a tin or earthen vessel, until it has risen sufficiently, divide it into three parts, then bake it as other bread, and you will have three large loaves.—*N. Y. Far.*

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Turkish Preparation of the Tomatoes—Mr. Editor.—In one of your late numbers, I observed a notice of the tomato, by one who appears to appreciate that vegetabe at its just value. Without, however, agreeing with your correspondent in

all its claims to excellence as an important article of Materia Medica, I conceive we have nothing to equal it in giving pungency and flavor to our commonest dishes. It is a great desideratum to have it at all seasons of the year; and some of your readers will doubtless feel obliged by learning how to obtain it in a simple, easy, and economical manner. In Turkey, it is a universal favourite, and enters into the composition of all their sauces. I frequently saw it made, and the following recipe may be depended on, as it was corrected under the eyes of the good housewife herself.

The tomatoes are first washed in a weak brine, and hung up in a cool place to drain. until the following day; then squeeze them thoroughly by hand throwing away the skins. The pulpy mass is strained through a fine cloth to prevent the seeds from passing through. It is then salted; put into shallow earthen plates, or dishes, and exposed to the sun for 12 days, or until it becomes a thick paste. It should be stirred with a wooden spoon, twice a day, while exposed to the sun. It is then fit for use. With respect to the quantity of salt to be added to the paste, the rule is, to put a handful and a half to the pulp of a hundred tomatoes, if large, and less, if smaller.

Those who prepare tomatoes in this way will be surprised at the small quantity obtained, but their surprise will cease when they learn how far it will go. A bit not larger than a Lima bean will be sufficient to flavour the soup of a family of 20 persons; and a much smaller quantity for sauces. A small pot which I brought with me, containing about half a pint, lasted my family more than a year, and we used it very freely.

By stirring it frequently, fresh portions are exposed to the sun, and the salt is more thoroughly incorporated with it. The rule of 12 days holds good at Constantinople, and I should think would be sufficient here. At any rate, it should be thoroughly dried, (covering it over at night,) until it becomes of the consistence of hard butter.

I have planted a large quantity of tomatoes, and shall make the sauce according to the above recipe. Should an opportunity present, I will forward a small specimen, in order that you may knowingly recommend it to your readers.

Yours, truly, D.—*N. Y. Far.*

MONTHLY CALENDAR

OF

HORTICULTURE AND FLORICULTURE

FOR MAY.

VEGETABLE GARDEN.

You may continue during this month to plant Snap Beans; it would be well to plant a small bed every two weeks for a regular supply. Where the ground is dry you may soak your seeds in water over night, and plant them in the morning—hoe the Beans planted last month.

Plant Parsnips and Carrot seeds for winter use, in the early part of this month—if sown later the seed is apt not to vegetate, and if it does, the young plants are liable to be destroyed by the heat of the sun.

You may in this month sow Cabbage and Broccoli seeds. This is usually neglected till a later period. The plants from seed sown at this time are likely to survive the heats of the summer, and produce heads early in the fall. Persons usually depend on purchasing their Cabbage seed. It is not generally known that Cabbage seeds do not degenerate in this climate—some of the finest Cabbages produced on the Neck are from seeds raised in this country on the same farm for 30 years in succession, without the smallest appearance of deterioration.

You may still continue to sow Lettuce of various kinds. Let the seeds, however, be so thinly sown as not to require transplanting, as it does not always succeed at this season of the year.

Salmon and Turnip Radishes may be sown every two weeks during this month. It is not a bad plan to mix the seed of Lettuce with Radishes, the latter will be fit to use, before the former interferes with their growth.

Celery may be sown about the beginning of this month. Choose a shady situation, let the seed be sown pretty thick, and in dry weather well watered. These plants are intended to be set out in trenches in July.

Squashes, Melons and Cucumbers may be planted in the early part of this month; we have seen the following plan adopted in the North, in raising these Fruits and Vegetables, which eventuated very successfully. Ditches 3 feet wide and 18 inches deep, were dug 10 feet apart. These were filled up to the surface with stable manure, then covered over with earth a foot deep, and planted. These plants grew vigorously, and immense crops were produced.

It is not yet too late to plant Okra seed; (for the method, see last month.)

Pepper and Tomatoes seed may be sown in the early part of this month, and in about thre or four weeks will be fit for transplanting. Thee Pepper seed should be planted in small ridges about 18 inches apart. The Tomatoes in hills 5 feet from each other, 3 plants on each hill, or in ridges 4 feet apart, and planted 3 feet on the ridge.

This is the month for gathering all kinds of Pot and Medecinal Herbs, they should be cut in a dry day, and dried in the shade.

This is the month for weeding and watering. If the weeds are not now destroyed, they will produce seeds which will come up and give you much trouble in future. Should the month prove dry, your seeds will hardly come or flourish without regular watering.

FRUIT GARDEN.

Examine carefully your Peach, Nectarine and Apricot Trees. See that they are not infested by insects or caterpillars. These trees often have more fruit than they can support. All superfluous fruit and shoots should be removed; these deprive the trees of their nourishment, and would render them defective, and their fruit inferior.

Remove all useless shoots from your Vines, be cautious not to disturb the bearing shoots, or those from which you expect a crop the following year.

Be attentive to your Fig Trees, the tops have all been killed, but they are putting forth abundantly from the roots—remove all but two or three shoots, and in the course of a month, select the finest and most thrifty one to form a fine tree, removing all the rest.

FLOWER DEPARTMENT.

There is not much to be done in this department during this month, except the transplanting your young plants sown during the last month, keeping your garden free from weeds, and using the watering pot frequently. The jars in your greenhouse may now be removed to a shady situation, but not under trees or shrubs; they require a top-dressing before they are taken out viz: removing a couple of inches of earth from the surface, and replacing by fresh earth, mixed with good rotted manure. Let your plants have plenty of air, and be somewhat protected during heavy rains.

NATIVE PLANTS THAT BLOOMED IN APRIL.

Although the season has been unusually backward, yet an immense number of Plants, Shrubs, and Forest trees bloomed during the last month, we have not room to designate them all. Among these were the beautiful *Trillium sessile;* the blood-root *Sanguinaria canadensis; Podophyllum peltatum;* the *Azaleas; Polygola lutea;* several species of the *Andromeda*, and of the Huckleberry, *vaccinium;* the Dogwood, *Corus Florida;* the Oak, Chesnut, Pawpaw *(Asimina triloba)* and a great variety of others; indeed, our woods are full of fragrance and beauty.